A RIL 23, 1951

STEEL

The Weekly Magazine of Metalworking

Plan Your Materials Handling

How Much Can It Save You?
What Should It Cost You?

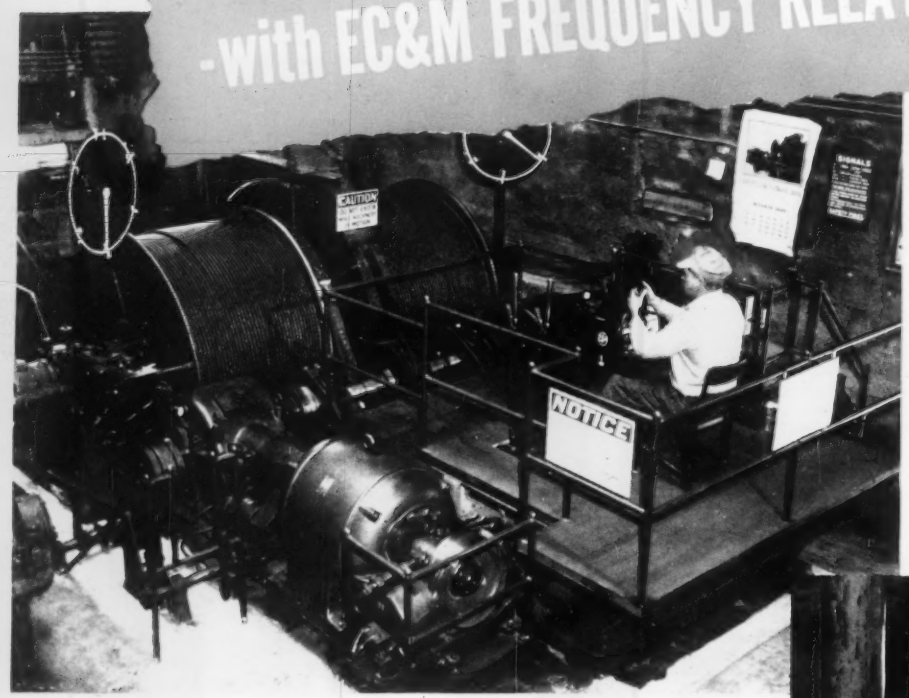
—on page 68

Our New Steel Capacity
—Where and How Much, p. 42

ey Defense Contact Men
—An Up-to-Date Directory, p. 49

A wide choice of cage speeds on this Two-Motor Mine-Hoist

-with EC&M FREQUENCY RELAY CONTROL



The EC&M Type WB Brake shown on the end of the motor shaft is quick-setting and fast-releasing — maintains high efficiency of the hoist.

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STEEL
The Weekly Magazine of Metalworking

VOL. 128 NO. 17 APRIL 23, 1951

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***Next Week*... How a Small Industry Is Licking Materials Problems... 26th Annual Financial Analysis of the Steel Industry... Embrittling Effect of Steam on Stainless Steels... Foundry Modernization Expands Gray Iron Casting Capacity**

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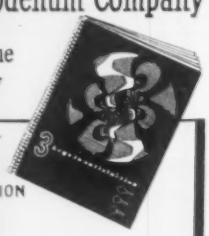

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S-4 E25

Behind the Scenes . . .

Cover Story

Phil Verne of Tinnerman Products Inc.'s project and methods department had a lot to do with this issue's materials handling cover. He lent us the materials handling models that were shot by Photographer Ed Nano.

Use of such models is no sign that industry is in its second childhood, we have discovered. Many companies use the scaled pieces to help them plan their plant layouts. Several companies specialize in making or supplying the models that metalworking companies use. Among them are Visual Production Planning Inc., Connelsville, Pa., and Visual Planning Equipment Co., Oakmont, Pa. The latter firm's models were the ones used and lent to us by Tinnerman.

Oldsmobile Division of General Motors Corp., incidentally, has its own shop where all Olds models are made.

Charting the Charts

Have you noticed the snazzy charts STEEL editors and artists have been devising lately? Fundamentally, they use two basic kinds of charts—the bar and the line graph—but dress them up far beyond the mere bar or line. An example of what can be done with the line graph appears on page 154 in Associate Editor Frank Briggs' department which each week summarizes the situation among nonferrous metals. A picture is used as a background for the line which shows how tin prices have changed.

That isn't the first time Frank has used such charts. The background photo used in the Apr. 2 issue to show lead stocks came about through the courtesy of Eagle-Picher Co.

Editorials

To the east of here on page 35 appears the signature of Irwin H. Such, Editor, under his editorial. He penned STEEL's editorial opinions last week and this while Editor-in-Chief Earl Shaner was on vacation.

Irwin, by the way, is just back from a two-week tour of the West Coast where he was looking into metalworking conditions. While there he had the unique experience of interviewing all three Kaisers at once—Henry J. Sr. and his sons, Henry J. Jr. and Edgar.

Wrong Grip

You can't get away with a single thing these days. In the Apr. 9 issue, page 48, there appears a cartoon by Pat Dwyer Jr. which shows a hand holding a needle. The cartoon was in connection with a story on renegotiation in which the subhead read: "Stitch in Time Saves Trouble, Money."

Some of our feminine readers have informed us that the cartoon was obviously drawn by a man since no woman would ever hold a needle the way Pat depicted the grip.

Incidentally, so many requests for reprints have come in on that article by Associate Editor John Morgan that we have had to put it back on the presses. If you want reprints, write Reader's Service Department, STEEL, Penton Bldg., Cleveland 13, O. Small quantities are free; prices of larger lots will be given on request.

Reprints are also available on another editorial job—the Checklist on Controls carried Apr. 2 beginning on page 59. Single copies can be had free from Reader's Service.

Expansion

In this issue appears STEEL's summary of steel expansion projects, what they consist of, how much the new facilities will produce, where they are located.

The job was compiled by our new Pittsburgh editor, Bill Humphries.

Puzzle Corner

For the Apr. 9 problem we are taking as correct any answers ranging from 115.9 to 116.3 feet per second as the velocity with which Joe DiMaggio hit the baseball. We are being so generous because everyone that submitted an answer rounded off their figures in a different way, accounting for the variations in the solution. Submitting correct answers were Norman Osborne of Armco Steel Corp., C. E. Norton of National Malleable & Steel Castings Co., E. R. Hornbake of Pittsburgh Tube Co. and E. R. Sewall of E. R. Sewall Mfg. Co.

The side of a barn is 60 feet long and is 40 feet from a road running parallel to it. A rope runs loosely along the 60-ft side of the barn. A cow is attached to this rope by means of a loop which slides easily along the rope. What is the least length of rope that will permit the cow to graze on the field between the barn and the road without permitting her to enter the road?

Shradu

(Metalworking Outlook—Page 31)

The Metalworking Outlook

Union Discipline Uncertain

CIO and AFL union leaders are uneasy about discipline among the locals. Always a problem, solidarity will be even more important—and perhaps harder to attain—now that labor chieftains indicate they will participate fully in the defense organization. With official representatives in the government, Big Labor will win some concessions in its interest but it also inevitably will have to become a party to compromises that won't set well with the rank and file. The CIO and AFL fear a wave of wildcat strikes. There are distinct advantages to nonparticipation in the defense setup.

Labor Gets Tough on WSB

That expectation of strikes made the labor representatives on President Truman's mobilization advisory board adamant in their insistence that powers of the proposed new Wage Stabilization Board be broadened to enable it to handle major labor disputes. Union members of the advisory group won the public and agriculture members by sheer persistence so that the industry members were voted down 12 to 4. Proposed is an 18-man WSB—six representatives of management, six of labor and six of the public.

All Eggs in One Basket?

Washington is putting nearly all of its eggs in one basket and is banking on the Controlled Materials Plan to supply what added force is needed to curb inflation. At the moment, no other radical control tools are being seriously considered. Changes in price, credit and wage rules will probably be limited to modifications and refinements until CMP proves or disproves its effectiveness. Since it will be late this year before anyone can determine just how good or bad CMP is, you can expect activity in other areas of control to be relatively quiet for some months to come—barring allout war, of course.

Inflation: Still the Big Threat

Inflation is not yet checked despite the fact that the government's wholesale price index declined in the first two weeks of April and scattered industrial prices have fallen. This is an adjustment period as industry slackens its pace slightly to get its bearings now that tighter materials controls have been put into effect by Washington. A good bet: The inflationary spiral has a couple of sharp twists left.

Metalworking and Defense

Here's an inkling of how metalworking fares in defense work compared with industry generally: Industry as a whole is now devoting an estimated 5 per cent of its production facilities to direct defense, but metalworking is devoting 15 per cent. U. S. business generally by the end

Production-Engineering News—p. 67 The Market Outlook—p. 149

of the year will be producing 12 per cent of its volume for direct defense. Metalworking may be doing 20 to 25 per cent direct defense work.

Danger Signs in Depreciation

There's an ominous tightening in the attitude toward depreciation allowances for tax purposes. Several hundred certificates of necessity have been granted for five-year amortization (p. 45), but far fewer, proportionately, are being given now than during World War II. What's more, in Canada the right to charge depreciation on all capital assets acquired from now on will be deferred for four years. Depreciation rights are not cancelled, and a company will be able in 1955 to begin writing off the new asset. The deferring scheme—never tried anywhere in the world before—is designed to stem overexpansion in nondefense areas.

Stronger Issue: Antipollution Control

If you're building or planning to build a new plant, it will probably pay to incorporate facilities to curb air and water pollution in your blueprints. Public sentiment against pollution is at a new high. Fanning the interest is the federal government, particularly in water pollution. The Federal Security Agency is co-operating with state authorities to survey the pollution situation for the major rivers of the nation. A report on the Tennessee basin reveals that $57 million worth of sewage and waste treatment projects are needed at 227 municipal and industrial locations in the valley.

More Appliance Repair Parts Needed

Watch for government action to increase production of appliance repair parts. The segment of industry making those items expects a marked increase in repair calls for home appliances as householders have to keep their old refrigerators or stoves a year or so longer than expected.

Straws in the Wind

Westinghouse has worked up a table showing where and for what job it needs 563 engineers . . . British business is much farther advanced than American firms in planning for the wartime problem of record protection, says National Industrial Conference Board . . . The Agriculture Department is preparing a program to insure adequate supplies of farm machinery after June . . . W. Stuart Symington's appointment as chairman of the RFC was a shrewd move by President Truman; Mr. Symington has the confidence of both business and labor.

Here and There in Industry

Reaction to the capital goods price regulation that will be announced soon by the Office of Price Stabilization is vigorously critical (p. 39) . . . Eleven aircraft companies in southern California used 22,796 subcontractors last year; this year they expect to use almost 30,000 (p. 41) . . . GE is going to establish an appliance park "somewhere in the Middle West" (p. 41).

Modernize Your Handling

Next Monday, the Fourth National Materials Handling Exposition sponsored by the Materials Handling Institute will open in Chicago's International Amphitheatre, with 204 exhibitors. During the same week, the young but lusty American Materials Handling Society will swing into a series of conferences and roundtable discussions on the latest methods for faster and cheaper in-plant movement of materials.

The billion dollar materials handling equipment industry has come a long way since the days when materials and parts were pushed, tugged and toted through cluttered aisles from machine to machine and from floor to floor and finally to the shipping room of old-fashioned multi-story plants as finished products. Today, one floor plants are designed for efficiency, not only in production machines but in equipment for moving materials. Workers go to and from their work stations through overhead or underground passageways without interfering with production. Second floors, if any, usually are balconies used for plant offices, laboratories, specialized sub-assembling and other non-production line functions. Aisles are wide. Machines have adequate space. Handling "built into" production lines includes conveyors, trucks, tractors, cranes, hoists and elevators in dozens of combinations.

As a manufacturer, you may not find it practicable to move into a new plant. But, you can modernize present facilities by using improved handling methods and equipment. Better handling does not necessarily involve tearing out an existing system and substituting another, but it does mean carefully checking the practicability of possibilities like these: Installing lifts for elevating work from floor to machine level; replacing trucks which may be older than you think; adding a mobile crane for handling materials in outdoor storage; using low-head cranes in areas where more clearance is needed; expanding storage space by stacking materials higher with high-lift trucks; assembling on a conveyor line; or simplifying packaging and crating.

The Chicago show directs attention to two things more efficient handling can accomplish: First, it can effect increased capacity by moving materials through your plant faster; second, it can reduce production costs and help offset rising labor and other costs. Management cannot afford to overlook factors like these in today's economy.

Irwin H. Suckl

EDITOR

MORE PLANT CAPACITY: Considerable significance is attached to the latest batch of certificates of necessity issued by the Defense Production Administration permitting industry fast depreciation write-offs on $1.3 billion in additional plants and equipment.

Most of the big basic steel expansion programs now are out of the way as far as the

tax setup is concerned, and emphasis is on corollary facilities needed to supply the materials the steel industry uses. These include scrap processing equipment; towboats, barges, cranes and trucks for handling ore and coal; refractory plants and furnaces for ferroalloys.

As a fourth entry in the primary aluminum field, Harvey Machine Co. has a $94.7 million certificate for a reduction plant at Kalispell, Mont., utilizing hydro-electric power. Also approved is a $78.4 million certificate for Reynolds Metals' reduction plant at Corpus Christi using natural gas for power. This will be the third gas-powered aluminum plant in the Gulf Coast area.

Plan for spreading out the aircraft program through additional subcontracting also is apparent through issuance of certificates covering plants for airframe sections, landing gear, engine components, electrical equipment, hardware and other parts. —p. 45

FAIR YEAR FOR APPLIANCES: Plentiful stocks of most household appliances in retail stores and, in some cases, sales at discount have been surprising many Americans. Apparently believing that the current emergency means World War II shortages all over again, they cannot accept the fact that we can rearm and produce a substantial volume of civilian goods at the same time. The continued offering of appliances was variously interpreted as evidence of overstocking and falling demand.

STEEL queried leading appliance manufacturers to obtain an accurate picture of production and demand for appliances. These manufacturers believe that production and sales in 1951 will exceed those for 1949, despite limitations on materials and credit curbs. Volume will be down about 30 per cent from 1950, a year of unusual production and sales caused by expectations of shortages following outbreak of war in Korea. Only in the larger television sets is demand lagging. Appliance makers anticipate a satisfactory year, despite materials shortages. —p. 39

PINCH ON DURABLES: A few days ago, we heard a machine tool builder quip: "Had a pretty good week. Lost only seven men to defense plants."

This illustrates a problem already serious in large capital goods production centers. Skilled workers are being lured away from established durable goods plants by the higher wages and other inducements offered by defense plants.

Now comes the Office of Price Stabilization with a formula for fixing a ceiling on capital goods prices. It would deny producers the right to recover through their prices increased expenses due to expanded production. Such expenses include overtime pay, shift differentials, subcontracting expenses, added engineering costs and the training of new workers.

If capital goods producers are restricted by a too tight price formula, they may lose the skilled workers necessary to build the tools essential to a strong defense and a strong civilian economy. —p. 39

* * *

BILLIONS FOR STEEL: During 1951, the steel industry is spending $1.2 billion for new and modernized equipment. Next year it will spend $1.4 billion for a 2-year total of $2.6 billion. This is equal to half of the invested capital of the steel industry today.

In terms of capacity, this tremendous expenditure means that the industry will be able to produce 110.5 million tons annually by the end of this year, a gain of 6.1 million tons from Jan. 1. By December, 1952, capacity will be up another 7 million tons to 117.5 million. Possibly another 3 million tons will be added to the 117.5 million even though two projects may be dropped.

Expressed in another way, the steel industry will be nearly half again as large as when World War II started, nearly a fifth larger than when it ended.

These optimistic figures bring little cheer to steel-hungry metalworking plants. But, consoling is the fact that steel is assured for defense orders beginning to fan out broadly and that more steel is likely to be available for civilian products than in the last war. —p. 42

* * *

KNOW YOUR CONTACTS: If you have to telephone, write or call on officials in the defense agencies, study the up-to-date directory of defense agency personnel compiled by this magazine's Washington staff and presented in this issue. It can save you miles of corridor walking, hours of waiting, and fruitless phone calls. Getting in touch with the right person first also will save time of the Washington workers and enable them to give industry answers to their questions more promptly. —p. 49

Appliance Prospects Look Bright

Retail sales of appliances won't reach 1950 peaks in 1951, but in most cases they will equal or surpass the 1949 performance. Television output hardest hit

RETAIL sales of domestic appliances are subsiding, but in most cases the production prospects are at least equal to 1949 output although below the peak performance in 1950. Business for the rest of 1951 for appliance makers and their suppliers won't be sensational, but it will be good.

A survey by STEEL of manufacturers of four appliances—gas and electric ranges, electric refrigerators and television receivers—reveals that only in the case of television sets have lagging retail sales forced substantial reductions in production. Hardest hit are the higher priced video units. Some companies offering a broad price range in TV sets are still operating at fair levels.

Gas Range Production

Millions of Units

1949	1950	1951
2.1	3.0	2.1

1951 estimated by STEEL; others gathered by Gas Appliance Manufacturers' Association

Still Good—Consensus among manufacturers queried by STEEL is that retail appliance sales have subsided to more normal proportions following the activity artificially stimulated by the start of the Korean war. The charts summarizing what manufacturers predict will be the appliance output for 1951 reveal this: Electric range production will probably decline 22 per cent from the 1950 level but it will still be 40 per cent above the 1949 output; gas range output will decline 30 per cent from 1950 but will equal the 1949 performance; electric refrigerator assemblies will fall 26 per cent behind the 1950 pace but will be 12 per cent ahead of 1949; television receiver output will slip 31 per cent from 1950 but will still be 73 per cent above the 1949 production.

The average production drop in 1951 from 1950 will be about 30 per cent, caused by the current 20 per cent restriction on end-use of steel and by even tighter curbs expected when the Controlled Materials Plan goes into effect July 1. All materials now are hard to get, but not yet unbearably so. Many appliance makers are using European and conversion steel.

Change Needed—Manufacturers of a wide range of appliances want NPA to modify its M-47 ruling so that, if sales of one item do lag to such an extent that even all of the restricted amounts of steel and other materials now permitted are not needed, the savings in materials may be used on another line. As M-47 now stands, that is not allowed. Appliance people believe they could break even 1950 sales records on some products if they had the materials. Those items would be ones for which the market is not yet saturated—notably electric ranges, gas and electric clothes dryers and automatic washers.

Television Production

Millions of Units

1949	1950	1951
3.0	7.5	5.2

1951 estimated by STEEL; others gathered by Radio-Television Manufacturers Association

Among the major appliances, the demand for television receivers may not pick up for several months. Normally it sloughs off in the spring and does not pick up sharply until after Labor Day. Refrigerator sales usually rise when the weather gets hot. Electric range sales will hold well. Gas range sales may improve gradually over the summer.

Electric Refrigerator Output

Millions of Units

1949	1950	1951
4.1	6.2	4.6

All figures estimated by STEEL

Not Serious—Manufacturers report that dealer inventories are undoubtedly high, but not alarmingly so except in the high priced television sets. One maker of a broad line of appliances, except radio and television, says its dealers' inventories are no higher than a year ago. This is a normal seasonal lull in appliances sales, made a little more pronounced than usual because scare buying has subsided, because income tax payments drew on available cash, because many sales that would have been made this spring were pushed up to last fall and because of credit restrictions under the government's Regulation W.

Appliance manufacturers are—on the whole—surprisingly optimistic about the future. They think enough materials will be available even in a garrison state to permit them good volume. They know that enough consumer buying power is available.

Electric Range Output

Millions of Units

1949	1950	1951
1.0	1.8	1.4

All figures estimated by STEEL

Price Formula Hurts

Capital goods regulation will not permit manufacturers to recover expanded costs

VIGOROUS criticism of the capital goods price regulation, soon to be announced by the Office of Price Stabilization, is being voiced by durable goods manufacturers and by National Production Authority officials.

Those who have studied the tentative regulation find that the ceiling price to be allowed will be the maximum price obtained during the first half of 1950, to which may be added direct materials costs increases and increases in factory labor costs.

Premium Pay Excluded—The formula excludes overtime pay and shift premiums, extra engineering costs, subcontracting expenses, extra tooling, extra patterns, expenses for training workers and many other items of increased expense.

NPA officials believe the proposed order would deny durable goods manufacturers a means of recovering all the extraordinary cost increases which inevitably are involved in expanding production. They point out that an expanded production program now can be carried on only in three ways: 1. Subcontracting; 2. overtime; and 3. multishift operations.

High Decision Awaited—Price Administrator Michael V. DiSalle admits the validity of these arguments, but

insists his job primarily is to keep prices down. The problem is one which will require a high policy decision, probably by the President. No early decision is expected.

Workers Go Elsewhere—A major disadvantage to capital goods manufacturers will be their difficulty in holding their work forces. OPS exempts military items from price controls. Manufacturers of goods for the military can continue to offer overtime pay, shift premiums and other inducements to workers. In a tight labor market, workers will tend to leave machine tools plants and other capital goods shops and seek employment in direct defense plants.

Defense-Support Steel Allotted

Allotment of steel for June delivery for 24 special programs needed to expand production for defense-supporting and essential civilian needs totals 1.4 million tons. The allotment is ordered by the Defense Production Administration.

Allotment for May is approximately 1.2 million tons for 19 programs.

The special programs, for which the steel is made available under priority authorizations or directives, are administered by various government agencies whose defense activities are under DPA's jurisdiction.

When the Controlled Materials Plan goes into effect July 1, defense-supporting requirements now provided for in special programs such as these will be met in the normal operation of CMP. The programming announced for June will be revised as need and available supply vary.

Among the more important special programs approved for June are: U. S. freight car, 308,000 tons; U. S. locomotive, 40,000 tons; oil country tubular goods, capacity output estimated at 140,000 tons; Defense Electric Power Administration, 90,000 tons; heavy power equipment, 95,000 tons; and Maritime ship construction, 31,000 tons.

Rail Scrap—12 Per Cent of Total

Although about 12 per cent of total puchased scrap originated on the railroads in 1950, they received only about 7 per cent of the rolled steel distributed, says William T. Faricy, president of the Association of American Railroads. Last year, the railroads turned back an estimated 3,920,000 net tons of scrap to mills and foundries.

New Purchasing Index Issued

Revised edition of the Munitions Board's "Index of Military Purchasing Offices" has been issued by the Department of Defense. The revision, intended to guide industry in selling to the military, lists all commodities assigned by Jan. 1, 1951, in 35 major categories and gives the departmental purchasing offices to which they are assigned.

NIFTY NESTIERS: Transfer and handling time on many small and medium sized parts is reduced with Nestier tote boxes supplying component parts to production line employees. Boxes can be tiered so that parts are visible to the worker and nested in a small space when not in use. Nestiers are made by Charles William Doepke Mfg. Co., Rossmoyne, O.

Lubrication Engineers Meet

The American Society of Lubrication Engineers elected as their new president Carl Schmitz, Crane Packing Co., Chicago, at their annual convention in Philadelphia last week.

V. A. Rayan, Crown Cork & Seal Co., Baltimore, was elected vice president at large and William F. Leonard, Chicago, and Oscar L. Maag, Timken Roller Bearing Co., Canton, O., were re-elected secretary and treasurer, respectively.

A method of evaluating lubricating properties of drawing compounds was presented by Wesley J. Wojtowicz, H. A. Montgomery Co. Inc., Detroit. The principle, he pointed out, is essentially the determination of the magnitude of the coefficient of friction. The quantity is obtained by determining the power consumption during the passage of a metal test strip through a set of loaded, flat steel guides.

Integral points of ball bearings were defined by E. H. Erck, Bendix Aviation Corp., Teterboro, N. J. He presented illustrations to show the mechanics of operation at high speeds and the merits of such bearings. A relation of consistency of greases, their structure and tenacity was evaluated at high speeds and high temperatures.

Wire rope lubrication and lubricants were discussed by John P. Critchlow, Pittsburgh, and Roland W. Flynn, New York, both with Gulf Oil Corp.

NPA's Fleischmann To Speak

Manly Fleischmann, National Production Authority administrator, will address the 42nd annual meeting of the American Steel Warehouse Association in Chicago May 3 and 4. Other speakers will include Sam Ewing, Office of Price Stabilization, Sen. Everett Dirksen (R., Ill.), and Walter S. Doxsey, association president.

Topics on the agenda include price control, the controlled materials plan, and warehouse control orders.

Use of Extra Shifts Up

Half of 6000 metalworking plants surveyed by the Department of Labor operate more than one shift, about a third had two shifts, and one-seventh of the plants were running on a three-shift basis. The multi-shift operations were mainly found in large firms.

AISI 59th General Convention

Announcement that Sen. Richard M. Nixon (R., Calif.) will appear as speaker at the May 24 dinner meeting completes the program for the 59th general convention of the American Iron & Steel Institute, at the Waldorf Astoria Hotel in New York.

The convention begins Wednesday, May 23, with the Charles M. Schwab Memorial Lecture featuring the morning session. Lecturer will be Dr. Percy W. Bridgman of Harvard University. Thursday morning, members will hear addresses by Walter S. Tower, Institute president, C. M. White, president, Republic Steel Corp. and Elton Hoyt II, of Pickands, Mather & Co.

Four technical sessions are scheduled for Wednesday afternoon. Subject and chairman for each session are: Steelmaking, K. L. Fetters, Youngstown Sheet & Tube Co.; Sinter, E. G. Hill, Wheeling Steel Corp.; Raw Materials, J. K. Killmer, Bethlehem Steel Corp.; Plant Operation, P. R. Wray, United States Steel Co.

Thursday afternoon, a discussion of industrial relations by management representatives is planned. Theme will be, "How Industrial Relations Can Contribute Toward Maximum Productivity."

Aircraft Subs Increase

More than half the subcontracts let by 11 California builders goes to small business

SUBCONTRACTING to small businesses in Southern California's aircraft industry is on the increase.

Testifying before the Small Business Subcommittee of the House of Representatives at hearings in Los Angeles, Capt. Leland D. Webb, vice president and western manager of the Aircraft Industries Association, said 11 aircraft firms in southern California used 22,796 subcontractors last year; expect to use 29,634 this year.

Half to Small Business—In 1950, 54 per cent of the sales dollar spent by the firms for subcontracts and material purchases went to small business. The Department of Defense defines small business as one of 500 or less employees. This year small business' share of aircraft subcontracts in the area is expected to reach 59.89 per cent; even higher in 1952. Airframe subcontracting in World War II reached a peak of 38 per cent in December, 1944.

Capt. Webb's statement before the Congressmen underscored the industry's intention to bring more small business into the subcontractor field. Los Angeles aircraft purchasing officials are scouring the country for subcontract manufacturing facilities to handle the $3.19 million in backlogs held by southern California's aircraft manufacturing industry. The Los Angeles area, according to the Aircraft Industries Association, produces 46 per cent of all the nation's aircraft.

Reynolds Gets Pilot Plant

Reynolds Metals Co. will operate the U. S. Air Force's Manufacturing Methods Pilot Plant at Adrian, Mich. The $20 million government-owned, industry-operated facility will be used for developing forging and extrusion techniques and the proving of theoretical designs.

No actual production will take place in the plant under the contract with Reynolds, except in case of emergency. The plant will be operated by Reynolds without fee or profit.

Pilot facilities are available to any industry or government agency wishing to do development work on processes of either military or commercial interest. The plant equipment consists of 15 hydraulic extrusion presses; the largest is 5500 tons capacity. Four additional presses originally belonging to I. G. Farben Co. were brought from Germany. Largest of these four has a forging capacity of 15,000 tons. The Adrian plant was formerly a World War II aluminum extrusion plant and was recently operated by Gerity-Michigan Co.

Navy, Convair Talk Contract

Negotiations for establishing a guided missile production plant near Pomona, Calif., are under way between the Navy Bureau of Ordnance and Consolidated Vultee Aircraft Corp. Convair has already purchased the site for the proposed plant.

Ordnance Works Available

Current civilian demand for ammonia and related products has caused the Army to announce it will receive bids from private firms for lease of the Morgantown Ordnance Works at Morgantown, W. Va. Equipped to produce anhydrous ammonia, methanol, formaldehyde, hexamine and ethyleneurea, the plant is now maintained on a standby basis except for its coke ovens operated by Sharon Steel Corp. under a five-year lease expiring June 30, 1951.

GE Plans Appliance Park

General Electric Co. is planning to expand its major appliance manufacturing facilities — refrigerators, ranges and washing machines in a big way.

The firm says it is going to establish an "appliance park" somewhere in the Middle West. It is investigating a number of sites and Louisville is among cities under consideration.

Roy W. Johnson, executive vice president, says construction of the park is predicated on his company's belief the electrical appliance business will show even greater growth in the future than in the past.

RFC Loans Received

Here are new Reconstruction Finance Corp. loans in the $500,000 or more category to metal producing and metalworking companies:

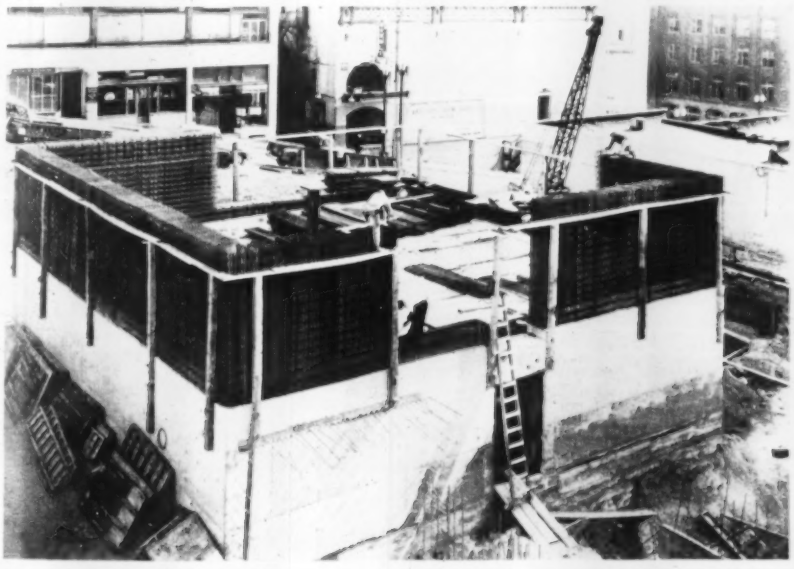
National Pneumatic Co., Boston, electrical and pneumatic equipment manufacturer, $700,000, for five years, for working capital and debt payment.

Federal Motor Truck Co., Detroit, motor truck and parts manufacturer, $1.5 million for 18 months, for working capital and debt payment.

Ahlberg Bearing Co., Chicago, antifriction ball bearing manufacturer, $500,000, for five years, for machinery and equipment.

Green River Steel Corp., Owensboro, Ky., manufacturer of special low carbon and alloy steels. Two loans: A straight RFC loan of $3,556,000 for five years, and a defense loan, on Commerce Department certification, of $5 million for five years. Both are to finance cost of construction, machinery and equipment.

A straight RFC loan of $550,000, for five years for construction of a plant which will require much processing equipment went to Consolidated Fisheries Inc., Lewes, Del.



WHERE THE MONEY GOES: A new vault for the Seattle branch of the Federal Reserve Bank of San Francisco is built of concrete reinforced with Steelcrete expanded metal, product of Wheeling Corrugating Co., Wheeling, W. Va. Steelcrete sheets are laid up vertically to form honeycomb labyrinth into which concrete will be poured to form walls of the vault's second level

Steel Expansion—How Much and Where

Industry will spend $2.6 billion in fastest two-year growth, adding at least 13.5 million tons. Total may reach 120 million tons by end of 1952

STEELMAKING capacity will be increased faster in the next two years than in any comparable prior period. At least 13.5 million tons will be added to the 104.2 million tons of ingot capacity in place Jan. 1, 1951. By the end of 1952, steelmaking capacity will exceed 117.5 million tons and may be near 120 million tons.

Finished steel production should increase to nearly 90 million tons by the beginning of 1953.

Cost will be tremendous. The steel companies are spending $1.2 billion for new and modernized facilities this year. Next year they will spend $1.4 billion. The two-year total, $2.6 billion, will be nearly half the capital investment in the industry today.

Roundup—STEEL herewith presents the first comprehensive roundup of the major expansion programs. Accompanying tables list 13 new blast furnaces, many new coke ovens, and open hearth and electric furnaces which will add 13.2 million tons to our net steel producing capacity.

This figure will be expanded before 1952 draws to a close. At least four major projects are under consideration. If built, they would add almost 3 million tons of capacity. These include a new plant at Paulsboro, N. J., by National Steel Corp., the New England project at New London, Conn., and the proposed Gibralter Steel Corp. mill at Trenton, Mich.

Not included in the accompanying table are a considerable number of small expansions for which figures are not available.

Where Is It?—Analysis of the expansion figures shows new capacity is being added in every important steelmaking district. The Eastern seaboard gains importantly through the new Fairless Works at Morrisville, Pa., plus additions by established eastern producers. Should the National and New England mills be built, the East would be the largest beneficiary of the current expansion program. Chicago, Pittsburgh, and Cleveland are gaining important additions. The Southwest gets several sizable units.

Big Blasts—Thirteen new blast furnaces are scheduled for completion within the next 20 months. The list may grow. Granite City is considering a new stack, but has not decided on the size. Rumors are circulating that a new merchant stack may be built in Ohio.

Several companies are effecting improvements in present stacks that

COKE OVENS

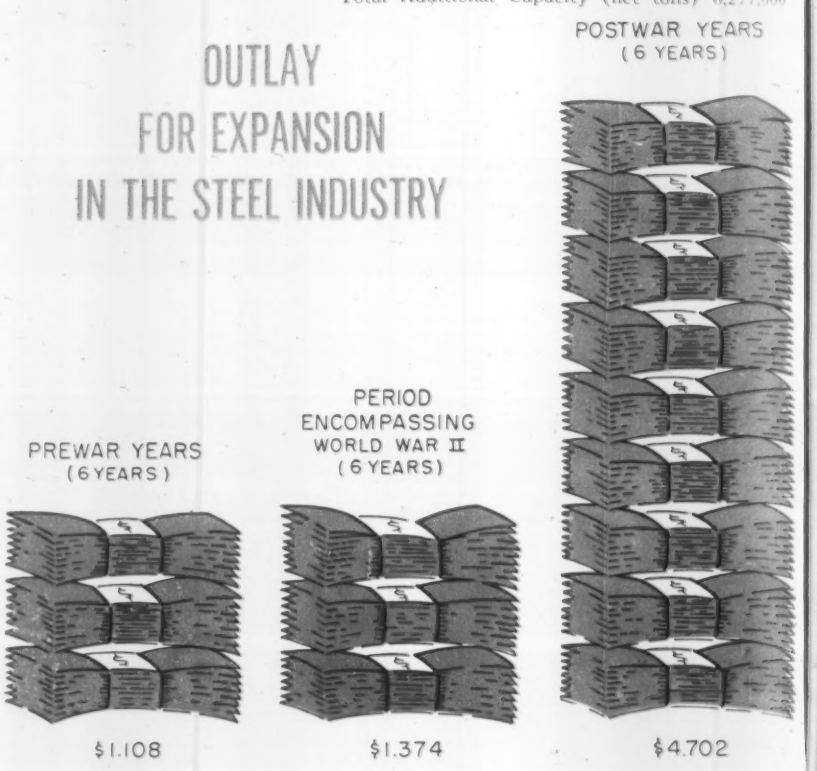
New Facilities

Company and Location	Number of Ovens	Annual Capacity Tons
Armco Steel Corp.		
Middletown, O.	75	
Bethlehem Steel Corp.		
Johnstown, Pa.	154	
Lackawanna, N. Y.	76	
Sparrows Point, Md.	65	
Granite City Steel Co.	25	
Jones & Laughlin Steel Corp.		
Aliquippa, Pa.	59	510,000
Republic Steel Corp.		
Birmingham, Ala.	63	409,000
Cleveland, O.	126	818,000
Sharon Steel Corp.		
Fairmont, W. Va.	60	400,000
United States Steel Corp.		
Morrisville, N. J.	170	916,000
Geneva Steel Co.		
Provo, Utah	23	150,000
Woodward Iron Co.		
Birmingham, Ala.	30	110,000
Youngstown Sheet & Tube Co.		
Indiana Harbor, Ind.	75	430,000

BLAST FURNACES

New Facilities

Company and Location	Number of Furnaces	Additional Annual Capacity (Net Tons)
Armco Steel Corp.		
Middletown, O.	1	505,000
Bethlehem Steel Co.		
Lackawanna, N. Y.	1	500,000
Crucible Steel Co.		
Midland, Pa.	1	500,000
Detroit Steel Corp.		
Portsmouth, O.	1	500,000
National Steel Corp.		
Great Lakes Steel		
Ecorse, Mich.	1	480,000
Weirton Steel Co.		
Weirton, W. Va.	1	500,000
Republic Steel Corp.		
Cleveland, O.	1	530,000
Sharon Steel Corp.		
Farrell, Pa.	1	290,000
Tennessee Products & Chemical Co.		
Oneida, Tenn.	1	300,000
United States Steel Corp.		
Morrisville, N. J.	2	1,200,000
Woodward Iron Co.		
Birmingham, Ala.	1	265,000
Youngstown Sheet & Tube Co.		
Indiana Harbor, Ind.	1	500,000
Improved Facilities		
Colorado Fuel & Iron Corp.		
Pueblo, Colo.	1	45,000
Jones & Laughlin Steel Corp.		
Cleveland, O.	1	50,000
United States Steel Corp.		
Youngstown, O.	1	112,000
Total Additional Capacity (net tons)		6,277,000



Figures are in billions of dollars

will up capacity substantially. While the projects listed in accompanying table will give 6.3 million tons annually, the total increase by the end of 1952 is expected to reach 7 million tons.

Coking Capacity—A partial list of coke ovens also is shown. These include only the facilities announced in connection with iron and steel expansion programs. Industry spokesmen believe 6 million tons of coking capacity will be added by the end of next year.

Granite City To Build

Plans new steelmaking, blast furnace, coking capacity to become integrated company

GRANITE CITY Steel Co. is undertaking a substantial expansion of steelmaking, blast furnace, coking and finishing facilities that will make it an integrated steel company with 1 million tons ingot capacity. The company has been awarded a certificate of necessity for $63 million for its expansion program, and the new steelmaking facilities will be completed in 1952.

Three New Open Hearths—Company will build three new 300-ton open hearths. Present steelmaking facilities include four open hearths of 250-ton capacity and 10 small 60-ton open hearths. The latter now are operating but will become standby capacity when the demand for steel eases. By the end of 1952, ingot capacity will be about 1 million tons annually.

Third Blast Furnace Planned—Granite City recently bought two blast furnaces and auxiliary equipment from Koppers Co. Inc., at Granite City and some $4 million is being spent to improve these. Daily capacity of the stacks is 1100 tons. Company now is considering a third blast furnace, although no decision as to size has been reached. Present thinking centers around a 900-ton stack.

More Coke Ovens—Twenty-five new coke ovens will be constructed. The company acquired 49 ovens with a monthly capacity of 25,000 tons in the deal with Koppers.

Other facilities to be added include a blooming mill, six soaking pits, three slab furnaces, a 4-high reversing breakdown mill and new hot-rolled finishing facilities.

OPEN HEARTH & ELECTRIC FURNACES
New and Improved Facilities

Company and Location	Number and Type	Additional Annual Capacity	Capacity as of Jan. 1, 1951 (Net tons)	Probable Capacity Jan. 1, 1953 (Net tons)
All Producers		13,227,000	104,229,650	117,544,650
Armco Steel Corp.			4,330,000	5,030,000
Middletown, O.	3 Open Hearth	400,000		
Sheffield Steel Co.				
Houston, Tex.	1 Electric	150,000		
Kansas City, Mo.	1 Electric	150,000		
Atlantic Steel Co.			190,000	290,000
Atlanta, Ga.	1 Electric	100,000		
Bethlehem Steel Co.		1,600,000‡	16,000,000	17,600,000
Lackawanna, Pa.	4 Open Hearth			
Los Angeles, Cal.	1 Electric			
Steelton, Pa.	1 Open Hearth			
Colorado Fuel & Iron Corp.			1,560,000	1,885,000
Pueblo, Colo.	2 Open Hearth	325,000		
Crucible Steel Co.			1,153,500	1,403,440
Midland, Pa.	* 6 Open Hearth	175,000		
	* 4 Electric	75,000		
Detroit Steel Corp.			660,000	1,290,000
Portsmouth, O.	4 Open Hearth	630,000		
Granite City Steel Co.				
Granite City, Ill.	3 Open Hearth	380,000**	620,000	1,000,000
Green River Steel Co.				190,000
Owensboro, Ky.	2 Electric	190,000		
Inland Steel Co.			3,750,000	4,500,000
Indiana Harbor, Ind.	4 Open Hearth	750,000		
Jones & Laughlin Steel Corp.			4,800,000	7,140,000
Cleveland, O.	2 Open Hearth	360,000		
Pittsburgh, Pa.	11 Open Hearth	1,980,000		
Kaiser Steel Co.			1,200,000	1,380,000
Fontana, Calif.	1 Open Hearth	180,000		
Keystone Steel & Wire Co.			325,000	425,000
Peoria, Ill.	1 Open Hearth	100,000		
Lone Star Steel Co.				500,000
Lone Star, Tex.	4 Open Hearth	500,000		
McLouth Steel Corp.			410,000	550,000
Trenton, N. J.	* 4 Electric	140,000		
National Steel Corp.			4,500,000	4,700,000
Weirton Steel Co.				
Weirton, W. Va.	1 Open Hearth	200,000		
Pittsburgh Steel Co.			1,072,000	1,592,000
Monessen, Pa.	*12 Open Hearth	520,000		
Republic Steel Corp.			8,967,000	9,879,000
Buffalo, N. Y.	* 1 Open Hearth	60,000		
Cleveland, O.	4 Open Hearth	672,000		
Sharon Steel Corp.	* 3 Open Hearth	180,000	1,441,000	1,647,000
Farrell, Pa.	* 8 Open Hearth	206,000		
United States Steel Corp.			33,869,000	36,009,000
Morrisville, Pa.	9 Open Hearth	1,800,000		
Youngstown, O.	*15 Open Hearth	160,000		
Geneva Steel Co.				
Provo, Utah	1 Open Hearth	180,000		
Universal-Cyclops Steel Corp.			55,000	71,000
Pittsburgh	* 1 Open Hearth	16,000		
Washburn Wire Co.			93,000	126,000
Phillipsdale, R. I.	1 Open Hearth	36,000		
West Virginia Steel & Mfg. Co.				
Huntington, W. Va.	1 Electric	87,000		87,000
Youngstown Sheet & Tube Co.			4,250,000	5,175,000
Indiana Harbor, Ind.	8 Open Hearth	1,225,000‡		

* Rebuilt. † Total program. **Net Gain. ‡ Discontinuance of bessemer steelmaking causes actual increase to be 925,000 tons.

Lukens Lets Contracts

Contracts for a $4 million improvement program have been let by Lukens Steel Co., Coatesville, Pa. Improvements are scheduled for miscellaneous finishing facilities, primarily for its line of clad steels. The present building will be enlarged and reinforced to permit operation of heavier cranes. A new building will be erected to house the stretcher leveler, shears, polishing facilities, leveler rolls, storage facilities and loading banks.

A new heating furnace will be added to the facilities at the 120-inch plate mill.

Stelco To Spend $50 Million

Steel Co. of Canada Ltd., Hamilton, Ont., will spend $50 million in the next two years on plant expansion to boost its primary capacity 50 per cent.

The main elements of the new project are dock and storage facilities, new coke ovens, a new blast furnace and four new open-hearth furnaces. In all, 83 new coke ovens will be installed, 30 of which will replace the old No. 2 battery built in 1918. When the job is finished, facilities will be available for producing 3350 tons of coke per day from 4500 tons of coal. The new blast furnace

will have a daily capacity of 1400 tons of pig iron. The new open-hearth shop will consist of four 250-ton furnaces with a rated capacity of 700,000 tons of steel per year.

In the past 11 years, Steelco has already spent more than $65 million in new plant and improvements.

More Ore To Be Moved by Rail

U. S. Steel Corp. will continue all-rail shipments of iron ore during 1951, and Republic Steel Corp. will also ship all-rail from Minnesota to prevent an iron ore shortage.

U. S. Steel's Oliver Iron Mining Co. ended the winter rail ore movement in March. Winter ore carrying activities enabled Oliver to bring down 1.5 million tons of ore by rail in 1950. Oliver's presently scheduled rail ore shipment will average between 400 and 500 cars a day.

Republic has already shipped nearly 330,000 tons of ore by rail to its various plants and plans to continue the practice throughout the spring, summer and fall.

Total industry rail shipments of ore may exceed 4 million tons in 1951. The extent of the rail movement will be determined by the ability of the railroads to supply gondola and hopper-bottom cars.

More Help for Subcontractors

Small businesses will get more opportunities for learning the needs of prime contractors as a result of subcontract clinics which the Air Force announced it will stage in five air procurement districts.

Coming exhibits will be patterned after the one sponsored Feb. 19-Mar. 2 by the Eastern Air Procurement District in New York. The first is set for Apr. 30-May 9 in the Mid-Central District, at the Chicago Navy Pier; the next will be May 15-19 in the Northeastern District at the Boston Armory.

After that, the schedule is still tentative. Central District plans a clinic for Detroit in July; Western and Southern Districts are arranging theirs for late 1951, in Los Angeles and Ft. Worth, Tex., respectively, dates and locations to be announced later.

The Army also moved to give small businessmen a better opportunity to enter defense production. The service will open 34 more display and procurement information centers in 16 states so potential subcontractors may examine products or component parts of items procured by the Army.

Westinghouse Adds Air-Arm

Westinghouse Electric Corp. will build a 400,000-square-foot plant to implement formation of an Air-Arm Division on a 75-acre tract bordering the Baltimore Friendship Airport. The new division will produce equipment to advance aerial warfare "a step nearer the pushbutton stage," says Walter Evans, Westinghouse vice president.

By 1952, the division hopes to be turning out Navy and Air Force computers for gun and rocket fire direction, radar and autopilots for fighter planes and guided missiles as well as complete airborne armament systems. In charge of operations at the new project is Mr. Evans, who is also manager of the firm's Electronics and X-Ray Division in Baltimore.

The Baltimore location was chosen because of the company's existing radar production facilities there and because the municipal airport can be used for test flying new equipment.

STEEL's Weekly Summary of Subcontract Opportunities

SUPPLIERS, who can turn out the precision instruments and components needed in the Air Force expansion program may find the subcontract opportunity they seek in STEEL's summary of awards.

One example of the orders announced by this service is the order received by General Electric X-Ray Corp., Milwaukee. Work there will start soon on a $3 million commitment of a highly restricted nature. The order fits in well with normal civilian x-ray and electromedical products, says W. C. Hill, assistant to the president.

Important sub-subcontract contacts may be made by other aircraft suppliers. Black, Sivalls & Bryson Inc., Kansas City, Mo., will make the landing gears for the Navy's Banshee jet fighter. The company got the contract, calling for $4.5 million, from McDonnell Aircraft Corp., St. Louis, which designed and developed the fighter.

Another big supplier, Rheem Mfg. Co., will fabricate and assemble components of the Scorpion F-89 all-weather interceptor under a letter of intent order from Northrop Aircraft Inc. The work will be done at Rheem's new plant at Downey, Calif.

For suppliers of heavier equipment, Pontiac Motor Division of General Motors Corp. is back in the picture, announcing receipt of a $57 million order to make medium caliber cannon in its main plant at Pontiac, Mich.

Other government awards to metalworking companies, of interest to subcontractors, are included in STEEL's weekly summary.

PRODUCT	CONTRACTOR
Barges	Anderson Bros. Engineering Corp., Portland, Oreg.
	Fohr & Co., Seattle
	National Steel & Shipbuilding Corp., San Diego
Radiomarine Surface Search Radar	Radiomarine Corp., New York
Wind'a s Motors & Controls	Western Gear Works, Seattle
Winches	Jaeger Machine Co., Columbus, O.
Pumps	Warren Steam Pump Co. Inc., Warren, Mass.
Air Compressors (10cfm-600psi)	Worthington Pump & Machinery Corp., Harrison, N. J.
Signal Generators (naval)	Daven Co., Newark, N. J.
	Hewlett & Packard Co., Palo Alto, Calif.
Motor Generators	Bogue Electrical Mfg. Co., Paterson, N. J.
	Allis-Chalmers Mfg. Co., Milwaukee
Generator Control Switchboards	Royal Switchboard Co. Inc., Brooklyn, N. Y.
Wire Recorders (864 ea)	Air King Products Co., Brooklyn, N. Y.
Hydraulic Pumps	Vickers Inc., Detroit
	Minneapolis-Honeywell Regulator Co., Minneapolis
Rotor Assemblies	Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Disc Assemblies	Pesco Products Div., Borg-Warner Corp., Bedford, O.
Engine Unit Gages	Thomas A. Edison Inc., West Orange, N. J.
Jacks (universal tail)	Aeronautical Machinery Corp., Chicago
Shells	Murray Co. of Texas, Dallas
	Chevrolet Shell Div., General Motors Corp., St. Louis
Percussion Primers	Progressive Service Co., St. Louis
Grenade Rifles	Knapp-Monarch Co., St. Louis
Trailers	Winter Weiss Co., Denver
Gears	Slaysman Co., Baltimore
Radio Sets (aircraft)	Bendix Radio Div., Bendix Aviation Corp., Baltimore
	Federal Mfg. & Engineering Corp., Brooklyn, N. Y.
Radio Test Sets (aircraft)	Hoffman Radio Corp., Los Angeles
Radio Receiving Sets	National Electronic Corp., Indianapolis
	Remler Co. Ltd., San Francisco
	Collins Radio Co., Cedar Rapids, Iowa
	Setchell-Carlson Inc., New Brighton, Minn.
Radio Set Components	Wilcox Electric Co. Inc., Kansas City, Mo.
Radar Sets	Federal Telephone & Radio Corp., Clifton, N. J.
Compass Systems (aircraft)	Kearfoot Co. Inc., Little Falls, N. J.
	General Electric X-Ray Corp., Milwaukee
	Sperry Gyroscope Co., Great Neck, Long Island, N. Y.
Radio Compass Components (aircraft)	Bendix Radio Div., Bendix Aviation Corp., Baltimore
	Magnavox Co., Ft. Wayne, Ind.
	Fairchild Camera & Inst. Co., Jamaica, Long Island, N. Y.
Automatic Pilot Assemblies	Westinghouse Electric Corp., Dayton, O.
Trainer Assemblies	Link Aviation Inc., Binghamton, N. Y.
Navigational Indicators	George W. Borg Corp., Equipment Div., Delavan, Wis.
Generators (aircraft)	Westinghouse Electric Corp., Dayton, O.
	Hartman Electrical Mfg. Co., Mansfield, O.
	Scintilla Magneto Div., Bendix Aviation Corp., Sidney, N. Y.
Motors (23V-DC)	Lear Inc., Grand Rapids, Mich.
Power Plant Assemblies (24v-2500w)	Honelite Corp., Port Chester, N. Y.
Compasses (Naval)	Waltham Watch Co., Waltham, Mass.
	Fee & Stemwedel Inc., Chicago
	Brunson Instrument Co., Kansas City, Mo.
	Lionel Corp., New York

Metalworking Writeoffs

Small companies get larger share of certificates of necessity for defense expansion

CERTIFICATES of necessity to encourage construction of 396 new or expanded defense facilities costing an estimated $1,310,799,399 have been issued by the Defense Production Administration.

Approximately 225 of the total of 396 certificates are for metalworking projects.

The certificates authorize the holders to deduct from taxable income from 10 to 100 per cent of the cost of the facilities during the next five-year period. The normal period for depreciation of facilities allowed by the Bureau of Internal Revenue for tax purposes is 20 to 25 years. Those certificates were issued between Mar. 7, when DPA announced its last periodical compilation, and Apr. 6.

Aid to Small Business—Of the total number of certificates of necessity granted thus far, about one-third are for projects costing $500,000 or less. Eighteen of the programs in the latest compilation are for iron and steel scrap dealers who are struggling to cope with the growing scrap shortage. The 18 certificates permit tax writeoffs averaging 75 per cent of the more than $2 million eligible for fast amortization consideration. Seventeen of the 18 scrap certificates involve projects costing $127,000 or less. Columbia Iron & Metal Co., Girard, O., had the largest scrap project approved—75 per cent of $949,000 in costs may be written off.

The biggest single project is to be carried out by Harvey Machine Co. and calls for the increased production of aluminum pig.

Harvey's certificate will permit it to write off 85 per cent of $94.7 million in costs.

The metalworking company granted a certificate, the facility location, the product or service, amount eligible and per cent certified are:

Onsrud Machine Works Inc., Chicago, metalworking machinery (aircraft), $26,629, 90%.
Continental Machines Inc., Savage, Minn., sewing machines, metal cutoff machines, gage blocks, special gages, $262,250, 85%.
Three M Tool and Die Co., York, Pa., machine tools, dies, $15,000, 75%.
Swan Engineering & Machine Co., Bettendorf, Iowa, tools, dies, jigs and fixtures, $26,194, 80%.
Jefferson Engineering & Mfg. Co., Detroit, tank track components, $118,782, 85%.
Hobart Brothers Company, Troy, O., electric arc welders, power plant, $13,787, 75%.
Diesel-Betz Company, Belleville, Ill., dies, jigs and fixtures, $44,461, 90%.
Harvey Machine Co., Kalispell, Mont., and in Northwest, aluminum pig, bauxite, $94,700,000, 85%.
Reynolds Metals Co., Corpus Christi, Tex., aluminum, $78,365,278, 80%.
Aluminum Co. of America, Unknown, primary aluminum, corollary facilities, $64,775,236, 80%.
Jackson Iron & Steel Co., Jackson, O., silvery pig iron, $2,438,550, 85%.
Timken-Detroit Axle Co., Detroit, axles for military vehicles, $732,302, 90%.
Timken-Detroit Axle Co., Oshkosh, Wis., axles for military vehicles, $429,014, 80%.
Timken-Detroit Axle Co., Ashtabula, O., axles for military vehicles, $4,878, 75%.
Timken-Detroit Axle Co., Kenton, O., axles for military vehicles, $49,760, 85%.
Timken-Detroit Axle Co., New Castle, Pa., axles for military vehicles, $309,970, 80%.
Allegheny Ludlum Steel Corp., Watervliet, N. Y., steel ingots, $3,242,000, 75%.
Cleveland Pneumatic Tool Co., Cleveland, airplane landing gear, $688,231, 80%.
Cleveland Pneumatic Tool Co., Cleveland, airplane landing gear, $350,000, 75%.
Sylvania Electric Products, Inc., Burlington, Iowa, subminiature electron tubes, $4,252,322, 75%.
Solar Aircraft Co., Des Moines, Iowa, aircraft engine parts, $1,679,000, 75%.
Solar Aircraft Co., San Diego, California, manifold banks for aircraft engine, $23,486, 85%.
Solar Aircraft Co., San Diego, California, hood for aircraft engine, $1,250, 75%.
Solar Aircraft Co., San Diego, California, parts for jet engines, $109,317, 85%.
Solar Aircraft Co., San Diego, California, aircraft engine parts, $158,549, 75%.
Solar Aircraft Co., Des Moines, Iowa, aircraft engine parts, $15,284, 85%.
Sylvania Electric Products, Inc., Towanda, Penn., tungsten & molybdenum (wire, powder, sheet), $2,899,335, 80%.
Sylvania Electric Products, Inc., Warren, Pennsylvania, electron tubes, $790,695, 80%.
Solar Aircraft Company, San Diego, Calif., aircraft engine components, $152,653, 80%.
Virginia Smelting Co., West Norfolk, Va., zinc powder chlorine gas, $1,265,485, 75%.
St. Joseph Lead Co. of Pa., Josephtown, Pa., slab zinc, $1,468,070, 75%.
Randolph Metals Co., Canton, Mass., slab zinc, $49,185, 75%.
Manasco Mfg. Co., Burbank, Calif., hydraulic landing gears, $663,634, 80%.
Ahlberg Bearing Co., Chicago, ball bearings, $550,000, 85%.
Torrington Co. Inc. of Ind., South Bend, Ind., antifriction bearings, $312,549, 85%.
Tyson Bearing Corp., Massillon, O., roller bearings, $71,515, 90%.
W. J. Bullock, Inc., Birmingham, secondary aluminum, zinc, brass, $765,000, 75%.
George Sall Metals Co. Inc., Undecided, nonferrous metals, $615,000, 75%.
Ohio Steel Foundry Co., Lima, O., steel rolling-mill rolls, $1,001,622, 80%.
Lebanon Steel Foundry, Lebanon, Pa., armor castings for tanks, $891,591, 75%.
Tyson Bearing Corp., Massillon, O., roller bearings, $1,145,000, 90%.
Champion Forge Co., Cleveland, steel drop forgings, $170,296, 80%.
Fairchild Engine & Airplane Corp., Farmingdale, L. I., N. Y., aircraft engines, $5,979,75%.
Ford Motor Co., Cincinnati, oil pump assemblies, $2,929,577, 75%.
General Motors Corp., Saginaw, Mich., ball bearing adjustors, $236,760, 90%.
General Motors Corp., Flint, Mich., spark plugs, $40,275, 75%.
Menasco Mfg. Co., Burbank, Calif., landing gears, $350,000, 75%.
General Motors Corp., Grand Rapids, Mich., aircraft engine parts, $1,598,000, 75%.
General Motors Corp., Harrison, N. J., roller bearings, $276,672, 90%.
Good-All Electric Mfg. Co., Ogallala, Nebr., metal-clad condensers, $200,000, 75%.
Mechanics Universal Joint Division, Borg-Warner Corp., Rockford, Ill., joint assemblies for aircraft, $150,000, 75%.
Kaiser Aluminum & Chemical Corp., Mead, Wash., aluminum pig, $5,870,500, 80%.
Kaiser Aluminum & Chemical Corp., Mead, Wash., aluminum pig, $364,006, 80%.
Titeflex, Inc., Newark, N. J., radio & ignition components, $289,065, 80%.
General Motors Corp., Vandalia, O., propeller assembly, $180,655, 90%.
Goodyear Aircraft Corp., Akron, aircraft parts, $200,929, 80%.
Reynolds Metals Co., Jones Mills, Ark., aluminum pig, $4,300,000, 80%.
Reynolds Aluminum Co., Troutdale, Oreg., aluminum pig, $475,450, 80%.
Jones & Laughlin Steel Corp., Aliquippa, Pa., pipe & tubing, $1,377,000, 60%.
Jones & Laughlin Steel Corp., Aliquippa, Pa., recovery of iron, $742,050, 85%.
Boeing Airplane Co., Seattle, aircraft and accessories, $4,941,916, 85%.
Johns-Manville Corp., Bridgewater Township, Somerset County, N. J., research and development of mineral fibers, $3,817,000, 75%.
Cornelius Co., New Brighton, Minn., aircraft air compressors, $49,873, 90%.
St. Regis Kraft Corp., Eastport, Fla., wood pulp, $17,638,000, 60%.
Bergen Wire Rope Co., Lodi, N. J., field wire conductors, $60,000, 75%.
Lycoming-Spencer Division, Avco Mfg. Corp., Williamsport, Pa., throttle body assemblies, $20,675, 90%.

(Please turn to page 166)

CHECKLIST ON CONTROLS

GOVERNMENT control orders are digested or listed each week in this "Checklist on Controls." For complete copies of NPA orders, write to U. S. Commerce Department, Division of Printing Services, attention E. E. Vivian, Room 6225, Commerce Bldg., Washington 25. For ESA orders, write J. L. Miller, Economic Stabilization Agency, Room H367, Temporary E Bldg., Washington 25.

Materials Orders

CONSTRUCTION — Amendment of Apr. 16, 1951, of NPA Order M-4 prohibits the beginning of any new swimming pool construction and places tobacco auction warehouses on the list of commercial projects on which construction may not be commenced without NPA authorization.

WATERFOWL FEATHERS—M-56, effective Apr. 16, 1951, reserves virtually the entire supply of goose and duck feathers and down for defense needs.

TANNING MATERIAL—M-57, effective Apr. 16, 1951, is designed to conserve vegetable tanning materials.

SULFURIC ACID—Schedule 3 (issued Apr. 18, 1951), to NPA Order M-45 puts sulfuric acid under NPA allocation in 11 far western states, and requires purchasers in all 48 states to certify to suppliers what the end-uses will be. Purchasers of 60 tons or less of sulfuric acid a month are exempted from Schedule 3.

ZINC ORE—MO-3 issued Apr. 12, 1951, by Defense Minerals Administration prohibits delivery or acceptance of zinc ore for processing under a toll agreement, without written authorization by DMA.

MINERAL EXPLORATION—MO-5 issued Apr. 6, 1951, by Defense Minerals Administration sets up procedures under which government aid may be obtained in financing the cost of projects for exploration for unknown or undeveloped sources of strategic or critical metals and minerals.

NPA Regulations

MRO—Amendment of Apr. 16, 1951, of NPA Regulation 4 prohibits use of DO-97 ratings to obtain the following materials and products as maintenance, repair and operating supplies: Chemicals; items appearing in List A of NPA Order M-47 (durable goods); nylon fibers and yarns; packaging materials and containers; paint, lacquer and varnish; paper and paper products; paperboard and paperboard products; photographic film; rails, tie plates, track spikes, splice bars, rail joints, frogs and switches; and rubber tires and tubes. Amendment is effective Apr. 16, 1951, and cancels any DO-97 rating applied prior to that date on those materials and products.

CANADIAN PRIORITIES — Amendment of Apr. 16, 1951, of NPA Regulation 3 extends to Canadian companies the right to apply for maintenance, repair and operating supplies assistance in the United States, and designates Canadian distributors and importers as eligible for priorities aid from the U. S.

Windows of Washington

By E. C. KREUTZBERG Washington Editor

A top NPA job was handed to Norman Foy on the day that he reported to serve as assistant director of the Iron & Steel Division. Walter Skuce got the job that means CMP

THE VERY DAY, April 16, that Norman W. Foy, Republic Steel Corp., reported to serve as assistant director of NPA's Iron & Steel Division (in charge of production) he was called in by Administrator Manly Fleischmann and handed a top NPA job. He is assistant NPA administrator in charge of the Metals & Minerals Bureau, which gives him supervision over the Iron & Steel Division, the Light Metals Division, the Copper Division, Tin, Lead & Zinc Division and the Miscellaneous Metals & Minerals Division.

At the same time Mr. Fleischmann announced appointment as assistant NPA administrator, in charge of the new Industrial & Agricultural Equipment Bureau, of Franz Stone, on leave as president, Columbus-McKinnon Chain Corp., Tonawanda, N. Y. He will run the Construction & Mining Machinery, Electrical Equipment, General Components, Motor Vehicle, Railroad Equipment, Engine & Turbine, Agricultural Equipment & Implements, and General Industrial Equipment divisions.

On leave from the presidency of the Oliver Corp., to serve as director of NPA's new Agricultural Equipment Division, is A. King McCord.

CMP Really—NPA's new assistant administrator in charge of Production Controls—which means largely the Controlled Materials Plan—is Walter C. Skuce, on leave from Owens-Corning Fiberglas Corp., Toledo, O. Mr. Skuce headed up the War Production Board's CMP in World War II.

H. B. McCoy, formerly assistant administrator for Industry Operations, NPA, now is assistant administrator in charge of the new Textile, Leather & Specialty Equipment Bureau.

Dean O. Bowman is assistant NPA administrator, in charge of the new Policy Coordination Bureau, and Frank R. Creedon is assistant administrator in charge of the new Facilities & Construction Bureau.

How CMP Will Affect Foundries

How will the foundry industry be affected by the Controlled Materials Plan which goes into effect July 1?

NPA answers: Steel, copper (and copper-base alloy), and aluminum castings will be included under the CMP as components of end-products fabricated from steel, copper and aluminum. Gray iron castings will be the exception; as in World War II, they will not be programmed under the CMP.

Norman W. Foy
. . . in charge of metals, minerals

The NPA will compute the quantities of pig iron, copper and copper-base ingots, and aluminum ingots required for producing castings for the programmed items. It will also compute the anticipated supply of those materials. It will do this bookkeeping merely to keep informed about the situation, so as to know, for example, how much of these materials will be available for civilian industry after military and defense-support needs have been supplied.

In general, the foundries will be expected to do their own procuring of these raw materials without assistance from the government. But the NPA will be ready to extend help in cases where the foundries are unable to get materials to produce castings for CMP programs. Also, NPA will seek to give assistance in hardship cases involving materials for purely civilian purposes.

Roughly the same situation will characterize scrap under the CMP. Allocations of iron and steel, copper and copper-base, and aluminum scrap are not contemplated as regular procedure under the CMP, but will be made when necessary to provide such assistance to foundries.

On Withstanding Ink . . .

For the first time, in a proceeding against alleged misreprensentation of commodities, the Federal Trade Commission has found fault with the thickness of plated coatings. In an order against the C. Howard Hunt Pen Co., the commission prohibits stamping gold plated pen points with the legend "14 Kt. Gold Plated" when the plate is not of substantial thickness. The points so marked, the commission found, "are coated with a gold alloy of a thickness of less than seven-millionths of an inch." The commission found that "a substantial thickness of gold plating of a fineness of not less than 14 karat is necessary to protect fountain pen points from the corrosive effects of ink."

Per Diem: $50 . . .

Former Representative John A. Carroll (Dem. Colo.), who was defeated last year by Senator Eugene D. Millikin (Rep. Colo.) in the senatorial race in Colorado has been appointed by President Truman as a $50-a-day consultant to keep track of legislation in which the White House is interested. He will work on an intermittent basis. Mr. Carroll, a so-called liberal, was remarkable chiefly in the 81st Congress for the fight he waged to prevent passage of the O'Mahoney freight absorption bill in its original form. While the measure was passed with the Carroll amendments, it was subsequently vetoed by President Truman.

That Military Metal . . .

The new metal, titanium, has been added to those with which, because of military demands, The National Production Authority is concerned. Titanium has been assigned to the NPA Light Metals Division of which Nigel H. Bell is director.

Freight Bill on Track . . .

Clearing its first hurdle, the McCarren freight absorption bill, S. 719, has been reported by the Senate Judiciary subcommittee and now is before the full committee. The bill, as now written, gives carte blanche to the quoting of delivered prices matching delivered prices of competitors.

Who's Who in the Defense Organization

Office of Defense Mobilization

Executive Office Bldg.—EXecutive 3300

Director: Charles E. Wilson, Room 102, Ext. 2101.

Information Officers: Andrew H. Berding, Room 174½, Ext. 471; Scott Hershey, Room 174½, Ext. 494; Stanley Baitz, Room 88, Ext. 3353.

Defense Production Administration

Old GAO Bldg. except as noted.—STerling 9200, 5200

Administrator: William Henry Harrison, Room 200, Ext. 4423.

Deputy Administrator for Resources Expansion: Major General Thomas F. Farrell, Room 330, Ext. 4746.

Deputy Administrator for Small Business: John C. Pritchard, 3312 Commerce Bldg., Ext. 4561.

Director, Materials Policy Division: J. Morgan, Room 211, Ext. 4691.

Director, Conservation Coordination Division: Howard Coonley, Room 211B, Ext. 3888.

Acting Director of Public Information: Edward K. Moss, 5111 Commerce Bldg., Ext. 4464.

Acting Deputy Director of Public Information: Albert J. Lubin, 5111 Commerce Bldg., Ext. 4464.

National Production Authority

T is for Temporary T Building, C for Commerce Building, E for 801 E Street N. W., OG for Old GAO Building, NG for New GAO Building—STerling 9200 and 5200

Administrator: Manly Fleischmann, 5100 C, Ext. 4461.

Assistant Administrator, Metals and Minerals Bureau: Norman W. Foy, Second floor west NG, Ext. 4943-4944.

Assistant Administrator for Production Controls, to manage the CMP: Walter C. Skuce, 5009 C, Ext. 4563.

Assistant Administrator, Chemical, Rubber and Forest Products Bureau: Appointment pending.

Assistant Administrator, Policy Coordination Bureau: Dean O. Bowman, 3844 C, Ext. 3770.

Assistant Administrator, Facilities and Construction Bureau: Frank R. Creedon, 307 OG, Ext. 4658.

Assistant Administrator, Textile, Leather and Specialty Equipment Bureau: Horace B. McCoy, 3840 C, Ext. 3288.

Assistant Administrator, Industrial and Agricultural Equipment Bureau: Franz Stone, 5001B C, Ext. 4649.

Assistant Administrator, for Civilian Requirements: Lewis Allen Weiss, 1405 T, Ext. 2380.

NPA OFFICE OF PUBLIC INFORMATION

Director: Edward K. Moss, 5111 C, Ext. 4464.

Deputy Director: Albert J. Lubin, 5111 C, Ext. 4464.

Director News Division: Rollen B. Kadesch, 5014 C, Ext. 4445.

Director of Mailing List, for distribution of releases and regulatory material: E. E. Vivian, 6225 C, Ext. 568 and 532.

NPA INDUSTRY OPERATIONS ASSIGNMENTS

Chemicals: Joseph S. Bates, 2358 T, Ext. 4637.

Copper: Frank H. Hayes, 3077 C, Ext. 3918.

Iron and Steel: Melvin W. Cole, Second Floor, West, OG, Ext. 4456.

Light Metals: Nigel H. Bell, 3rd Floor E, Ext. 3530.

Miscellaneous Metals and Minerals: Frank H. Hayes, 3077 C, Ext. 3918.

Rubber: Leland E. Spencer, 1305 T, Ext. 3135.

Tin, Lead and Zinc: Whitman W. Hopton, 3077 C, Ext. 3897.

Agricultural Equipment: A. King McCord, Ext. 4445.

Communications Equipment: Calvert H. Arnold, 2065 5th Floor E, Ext. 4128.

Consumers Goods: Thomas W. Delehanty, 4th Floor, E, Ext. 2132.

Containers and Packaging: Charles A. Lewis, 113 OG, Ext. 2166.

Electronics Products: John G. Daly, 3rd Floor, E, Ext. 3586.

Leather: Julius G. Schnitzer, 2208 T, Ext. 3538.

Machinery: Marshall M. Smith, 2134 T, Ext. 4688.

Motion Picture-Photographic Products: Nathan D. Golden, 3826 C, Ext. 3717.

Power Equipment: Robert N. Hatfield, 1007 T, Ext. 4203.

Printing and Publishing: Arthur R. Treanor, 5th Floor E, Ext. 2413.

Technical Scientific Supplies: Howard Pringle, 1st Floor E, Ext. 2324.

Textiles: A. Henry Thurston, 108 OG, Ext. 3906.

Transportation Equipment: Robert L. Glenn, 337 OG, Ext. 542.

Building Materials: John L. Haynes, 326 OG, Ext. 2334.

Construction Controls: Rufe B. Newman, 319 OG, Ext. 3907.

Industrial Expansion: William E. O'Brien, 314 OG, Ext. 4545.

Loans: Harvey M. Harper, 310 OG, Ext. 4558.

Tax Amortization: Ross A. Gridley, 301 OG, Ext. 4587.

Consumer End Products: Leslie P. Doidge, 1405 T, Ext. 2671.

Materials for Consumer Goods: Isaac Q. Lord, 1405 T, Ext. 2671.

MRO Problems: Richard W. Murphy, 3837 C, Ext. 3754.

Conservation Activities, such as the Ferrous Scrap Drive: A. E. Pierce, 2236 T, Ext. 4718.

NPA IRON & STEEL DIVISION

2nd Floor West, NG.—STerling 9200 or 5200

Director: Melvin W. Cole, Ext. 4455-4456.

Deputy Director: Richard F. Sentner, Ext. 4346-4347.

Assistant to the Director: Frank T. McCue, Ext. 3962-2369-2328.

Assistant Director in Charge of Facilities Expansion: R. J. Wysor, Ext. 3962.

Assistant Director in Charge of Ferroalloys: Dr. James H. Critchett, Ext. 2305.

Assistant Director in Charge of Metallurgy and Conservation: E. J. Hergenroether, Ext. 4868.

Wire Section: Norman Melville, Chief, Ext. 4656.

Pipe & Tube Section: Jay W. Owings, Chief, Ext. 4437; Willis J. Resiner, Ext. 2437.

Priorities & Statistical Control Section: Kenneth H. Hunter, Chief, Ext. 3974.

Plant Expansion Section: H. L. Leydo, Ext. 4813.

Sheet & Strip Section: Merrick McCafferty, Ext. 2700; Milton Englert, Ext. 2700; William R. Nolan, Ext. 2529.

Bars & Semi-Fin. Sections: Henry P. Rankin, Chief, Ext. 3110; George L. Anderson, Assistant Chief, Ext. 3151.

Warehouse Section: Russell Link, Chief, Ext. 2050; Charles Kramer, Ext. 2681.

Forgings Section: H. F. Weaver, Chief, Ext. 2004; J. E. Sweeney, Assistant Chief, Ext. 2609.

Castings Section: A. J. McDonald, Chief, Ext. 2080. Gray Iron and Malleable Castings: Francis J. Buckley, Ext. 2080.

Refract. & Fluxes Sec.: Marguerite M. Sauers, Chief, Ext. 2679.

Ferroalloys Section Chief: James H. Critchett, Ext. 2305; Harold Larsen, Ext. 4950; Roger Allen, Ext. 4729; David H. Duff, Ext. 4681; Ernest F. Mechlin, Ext. 4164; Frederick Franklin, Ext. 3756; Sidney Schein, Ext. 4695.

Scrap Section: Marvin S. Plant, Chief, Ext. 4520; Charles M. Brooks, Ext. 4181; John P. Voyer, Ext. 4181; Stuart J. Heiss, Ext. 4181; Ben H. Pritchard, Ext. 4181; Boyd Outman, Ext. 4520.

Stainless Steel Section: John S. Ewing, Chief, Ext. 3332.

Pig Iron Section: John A. Claussen, Chief, Ext. 2342.

Alloy & Cold Drawn Bar Section: John J. Boylan, Chief, Ext. 3333; Edward Koester, Cold Drawn Bar Unit, Ext. 4940.

Tool Steel Section: Felix Kremp, Chief, Ext. 4151.

Tin Plate Section: E. J. Sanne, Chief, Ext. 3334.

Structural Shapes Section: Thomas M. Dalby, Chief, Ext. 2767.

Plate Section: Max Hoffman, Chief, Ext. 4444; D. S. Wolcott, armor plate, Ext. 2988; Paul Landis, Ext. 2988; George W. Kirkley, Ext. 2988.

MRO Section: Frank A. Weidman, Chief, Ext. 4939.

Metallurgical Advisor: Veryl Graze, Ext. 4955.

Program Section: Charles Holcomb, Chief, Ext. 3152.

Munitions Board Liaison Representative: Kenneth M. Heinrich, Liberty 5-6700, Ext. 75543.

NPA MACHINERY DIVISION

2134 T—STerling 9200 or 5200

Director: Marshall M. Smith, Ext. 4688.

Assistant Director: William L. Beck, Ext. 2150.

Machine Tool Section Chief: Col. P. L. Hauser, Ext. 3757.

Machine Tool Section Assistant Chief: Paul S. Gaston, Ext. 3463.

Machine Tool Consultants: Payson Blanchard, Ext. 3502; Herbert L. Tigges, Ext. 3463; Robert M. Husband, Ext. 3502; Edgar J. Seifreat, Ext. 3463; Andrew G. Carey, Ext. 3463.

Metalworking Machinery: Thomas Shriver, Ext. 3502.

Light Power-Driven Tools: Herbert A. Newman, Ext. 4806.

Necessity Certificates: Jay Cresswell, Ext. 4855.

Foundry Equipment & Supplies: Aubrey J. Grindle, Exts. 4805 and 4806.

Welding Equipment: Dale D. Spoor, Ext. 4806.

Metal Forming Machinery: Paul Norris, Ext. 4807.

Industrial Furnaces & Heating Equipment: Carl L. Ipsen, Ext. 4805.

Construction, Mining, Oil Field & Agricultural Equipment: Neal Higgins, Ext. 713.

Farm Machinery: Robert Terry, Ext. 2921.

Materials Handling Equipment: Joe H. Peritz, Ext. 3860.

NPA LIGHT METALS DIVISION

Third Floor E—STerling 5200

Director: Nigel Bell, Ext. 3530.

Deputy Director: Timothy A. Lynch, Ext. 563.

Assistant to Director: Herbert L. Cullen, Ext. 4438.

Chief, Requirements and Priorities Branch: Connor B. Batman, Ext. 2343.

Chief, Programs and Statistics Branch: S. W. Blumenreich, Ext. 778.

Chief, Magnesium Branch: Perry D. Helser, Ext. 2597.

Head, Warehouse Section: Theodore E. Boeger, Ext. 2251.

Head, Sheet Section: Robert T. Farrell, Ext. 2251.

Head, Castings Section: Lloyd A. Mapes, Ext. 2251.

Head, Army Requirements Section: Augustus Martin, Ext. 2343.

Head, Navy Requirements Section: E. W. Digges LaTouche, Ext. 2343.

Head, Air Force Requirements Section: George F. Mahoney, Ext. 2343.

Head, Non-Military Government Requirements Section: Robert E. Heffernan, Ext. 608.

Head, Extrusion Section: Paul E. Horsch, Ext. 2251.

Facilities and Construction Section: Bailey P. Byars, Ext. 2222, and J. K. Thompson, Ext. 2222.

Progress and Statistics Branch: George Pagonis, Ext. 2251.

Titanium Specialist: (not yet appointed.)

Industrial Specialist: John C. West, Ext. 4263.

Commodity Industry Analysts: Alfred S. Dubinsky, Ext. 4263; William E. Fitch, Ext. 4263; Harwood Otto, Ext. 4263; Thomas A. Ritchie, Ext. 4263; R. B. Taylor, Ext. 2343.

Consultant: Jacob B. Neiman, Ext. 4263.

NPA COPPER DIVISION

Second Floor West NG—STerling 5200

Acting Director: Frank H. Hays, Ext. 3918.

Assistants: Lenox C. Chew, Ext. 3943; Alvin A. Meyrowitz, Ext. 3960; Paul Andrews, Ext. 4920; Lionel T. Bonner, Ext. 2272; William F. Cox, Ext. 3943; Frank Spitale, Ext. 4924; George F. Divine, Ext. 4924; Glenn E. Ralston, Ext. 4922; Joseph W. Mullaly, Ext. 4922.

NPA TIN, LEAD AND ZINC DIVISION

3077-3087 C—STerling 9200

Director: Whitman W. Hopton, Ext. 3898.

Tin: Erwin Vogelsang, Ext. 2363; W. L. Raup Jr., Ext. 3952; Robert Hough, Ext. 3953.

Zinc: Maurice Marcotte, Ext. 3929.

Zinc and Cadmium: Mrs. Margaret Murphy, Ext. 3315; John Sellon, Ext. 8124.

Lead: Arthur Cavanaugh, Ext. 4241.

Bismuth: George Tweedy, Ext. 3929.

Programs and Statistics: Herbert O. Rogers, Ext. 2436.

NPA MISCELLANEOUS METALS AND MINERALS DIVISION

Second Floor West, NG—STerling 5200

Acting Director: Harvey B. Sharpe, Ext. 4134.

Assistants: John E. Steinhauer, Ext. 4134; Mary E. Lubig, Ext. 4134.

NPA OFFICE OF SMALL BUSINESS

STerling 5200 or 9200

Director: John C. Pritchard, 3312 C, Ext. 4561.

Assistant to the Director: C. F. Hughitt, 1410 T, Ext. 2315.

Government Procurement Information: Dan. R. Hudson, 1457 T, Ext. 3488, and Ernest W. Reisner, 1450 T, Ext. 3011.

Assistance on Scarce Materials: Philip Bennett, 1439 T, Ext. 2668.

Assistance on Management Problems: Wilford L. White, 1440 T, Ext. 2383.

Assistance on Financial and Taxation Problems: J. C. Dockeray, 1440 T, Ext. 2434.

Assistance on Organizing Contracting Pools: W. O. Metcalf, 2311 T, Ext. 3235.

Office of Price Stabilization

STerling 4200

Administrator: Eric Johnston, 411 Vermont Ave., N. W., Room 315, Ext. 4147.

Wage Stabilization Board Chairman: Cyrus S. Ching, H305 Temporary E Building, Ext. 2231.

Price Stabilization Board Chairman: Michael V. DiSalle, H383 Temporary E Building, Ext. 3215.

Information Officer: Bainbridge Crist, Ext. 6534.

All following on Second Floor, Temporary S Building:

Director, Industrial Materials and Manufactured Goods Division: Murray D. Smith, Ext. 3132.

Assistant Director, Industrial Materials and Manufactured Goods Division: John M. Bulkley, Ext. 3132.

Chief, Metals Branch: Sam Ewing, Ext. 5108. Assistant Chief: Wm. F. Sterling, Ext. 5228. Chief, Machinery Branch: Leslie J. Carson; Ext. 6534.

Chief, Building Materials Branch: Fred Schwartz, Ext. 3502.

Chief, Automotive Branch: Leroy Jardan, Ext. 4938.

MACHINERY ASSIGNMENTS

Machine Tools: Roger Magoun, Ext. 6534.

Cutting Tools and Industrial Supplies: Edward L. Norman, Ext. 6534.

Transportation and Equipment: Lawrence W. Wallace, Ext. 3519.

Electrical Generating and Power Equipment: George W. John, Ext. 5533.

Processing Machinery (foundry equipment, etc.): H. A. Porter, Ext. 5533.

Farm Equipment: A. A. Stone, Ext. 2291.

General and Auxiliary Equipment: Warren Leland, Ext. 6534.

METALS ASSIGNMENTS

Iron and Steel Section Chief: Walter H. Dupka, Ext. 4610.

Iron and Steel Scrap: Max Schlossberg, Ext. 3236; Walter L. Kimber, Ext. 3236.

Castings Section Chief: Edward J. Metzger, Ext. 4395; Assistants: Ralph N. Cole, Ext. 4395, Lawrence C. Mertz, Ext. 4395, and Ralph L. Lee, Ext. 4395.

Iron and Steel Warehousing: Charles Potter, Ext. 4298.

Iron and Steel Tubular Products: Edward J. Dickson, Ext. 4395.

Iron Ore and Pig Iron: William Kerber, Ext. 4610.

Ferroalloys: Charles O. Jacoby, Ext. 5228.

Electric Furnace Steels: Fred T. Youngman, Ext. 4610.

Fabricated Steel Products: Sidney H. Burgess, Ext. 5228.

Lead, Tin and Zinc Section Chief: Leo Halpern, Ext. 5228.

Copper Section Chief: Carl K. Lenz, Ext. 5228.

Assistants: Arthur F. Norling, Ext. 228 and Elvin H. Ullrich, Ext. 5108.

Aluminum and Magnesium Section Chief: William N. White Jr., Ext. 5228.

Department of Defense

The Pentagon—LIberty 5-6700

Col. George W. White is chief of the Industrial Services Branch, Office of Public Information, Office of Secretary of Defense organized to answer questions and clear requests of industry, and Jay Cassino is chief of the branch's Information Section. They are located in Room 2A858, The Pentagon. Extension for Col. White is 75881, for Mr. Cassino 75310.

Those wishing to contact personnel in the Munitions Board (the military policy coordinating agency) should see or telephone or write to the Public Relations Adviser to the Munitions Board, Col. William Westlake 3E843 The Pentagon, Ext. 75361.

Small businessmen with problems that require help from the military should see, write or telephone the chief, Small Business Office, Munitions Board, who is Comdr. Phillip F. Ashler, Room 3D760 The Pentagon. Ext 71481.

For assistance in matters relating to procurement see the Director, Central Military Procurement Information Office, Col. Bernice C. Philipps, Room 3D760 The Pentagon Ext. 75321.

Acting Director of Information: Allan Sherman Ext. 3337.

SUPPLY DIVISION

(Responsible for bringing minerals supply into balance with requirements)

Director: Tom Lyon, Ext. 3433

Lead and Zinc: Otto Herres, Ext. 5226.

Manganese and Ferroalloys: P. R. Bradley Ext. 2376.

Industrial Minerals: James L. Barr, Ext. 5273

Iron Ore: Franklin G. Pardee, Ext. 4024.

Copper and Light Metals: James Head, Ext 2376, and A. B. Parsons, Ext. 5226.

REQUIREMENTS DIVISION

(Responsible for estimating materials and equipment claims for mining industry)

Director: Harold A. Montag, Ext. 2670 and 2649.

Mine Operations: Francis B. Speaker, Ext 3038.

Mining Machinery: Leslie M. Case, Ext. 3433

Manpower: Stephen W. Wood, Ext. 4772.

PRODUCTION EXPANSION DIVISION

(Responsible for arranging contracts involving minerals expansion projects)

Director: C. Otto Mittendorf, Ext. 5371.

Assistants: S. P. Warren, Ext. 5370; William E. Ellis, Ext. 5379, and H. E. Olund, Ext 5372.

FOREIGN DIVISION

(Responsible for purchase of minerals from abroad)

Director: Thomas C. Baker, Ext. 3405. Interior Bldg.—REpublic 1820

Administrator: Clifford B. McManus, Ext. 664 and 5237

Deputy Administrator: James Fairman, Ext. 2553.

Deputy Administrator: Ken G. Whitaker, Ext. 664 and 5237.

Director of Information: George Sanford Holmes, Ext. 3222.

Petroleum Administration for Defense

Interior Bldg.—REpublic 1820

Deputy Administrator: Bruce K. Brown, Ext. 5231.

Assistant Deputy Administrator: Hugh A. Stewart, Ext. 4164.

Assistant Deputy Administrator for Domestic Industry Operations: Alfred P. Frame, Ext. 3891.

Assistant Deputy Administrator for Foreign Petroleum Operations: Stribling Snodgrass, Ext. 3165.

Program Division Director: Cecil L. Burrill, Ext. 2728.

Materials Division Director: Frank Watts, Ext. 5397.

Acting Director of Information: William J. Dougherty, Ext. 3171.

Defense Solid Fuels Administration

Interior Bldg.—REpublic 1820

Administrator: Charles W. Connor, Ext. 5225.

Deputy Administrator: Edward T. Klett, Ext. 5210.

Assistant to Administrator, and Director of Information, G. Don Sullivan, Ext. 5392.

Mining Machinery & Equipment Coordinator: Clem C. Austin, Ext. 2481.

Mining Machinery & Equipment Consultant: Edward H. Holley, Ext. 5391.

Transportation Division Director: Walter J. Howard, Ext. 2076.

Industry Finance Division Director: Leo Plein, Ext. 2403.

Coke Division Director: George P. Wilson, Ext. 2203.

Assistant: Donald McBrien, Ext. 2203.

Equipment and Materials Requirements Division Director: Clyde W. Woosley, Ext. 2481.

Commodity Industry Analysts: Elmer J. Crossen and Leo A. Kraemer, Ext. 2203.

Defense Minerals Administration

Interior Bldg.—REpublic 1820

Administrator: James Boyd, Ext. 4815.

Deputy Administrator: James Douglas, Ext. 5357.

Defense Transport Administration

Interstate Commerce Commission Bldg.—REpublic 7500

Administrator: James E. Knudson, Ext. 4134.

Director of Information: Charles Baxter, Room 1116, Ext. 6309.

Defense Manpower Administration

Labor Department Bldg.—EXecutive 2420

Administrator: Frank P. Graham, Ext. 17.

Executive Director: Robert C. Goodwin, Ext. 780.

Deputy Director: Leo Wertz, Ext. 215.

Director of Information: Laurence Weiss, Ext. 388.

General Services Administration

GSA Bldg.—EXecutive 4900

Administrator: Jess Larson, Room 6137, Ext. 4312.

Special Assistant to the Administrator (for metals and minerals expansion programs under the Defense Production Act): Irving Gumbel, Room 5113, Ext. 5181.

Commissioner of Emergency Procurement Services (for stockpiling): A. J. Walsh, Room 7132 (Seventh and D streets S. W.), District 5700, Ext. 2243.

Commissioner of Federal Supply Service: Clifton E. Mack, Room 3143, Ext. 5268.

Director of Information: Joseph S. Cohen, Room 6113, Ext. 4511.

Deputy Director of Information: Herbert C. Plummer, Room 6113, Ext. 4511.

Maritime Administration

Commerce Bldg.—EXecutive 3340

Director of Information, Stephen C. Manning Jr., Room 4857, Ext. 60

National Advisory Committee for Aeronautics

1724 F Street—LIberty 5-6700

Information Specialist, Walter T. Bonney, Room 201, Ext. 63229.

Research Information Division, Eugene Miller, Chief, Room 202, Ext. 63229.

Atomic Energy Commission

1901 Constitution Ave. N. W.—STerling 8000

Director of Information, Morse Salisbury, Room 204, Ext. 696.

Reconstruction Finance Corporation

811 Vermont Ave. N. W. Phone: EXecutive 3111

Director of Information, A. B. Merritt, Room 1123, Ext. 90.

National Security Resources Board

Executive Office Bldg.—STerling 4700

Special Assistant to Chairman (on information): Edward S. Jones, Room 204, Ext. 3242.

United States Coast Guard

1300 E Street N. W.—EXecutive 6400

(In addition to conducting regular Coast Guard activities, the Coast Guard plays a leading role in shaping policies and conclusions of the Merchant Marine Council and the Ship Structure Committee)

Information Officers: Capt. Samuel F. Gray, and Lt. Cmdr. William D. Strauch Jr., both in Room 1008, Ext. 2993.

Office of Technical Services

Commerce Bldg.—STerling 9200

(government agency for making available to the public the technical information developed by the government)

Director: John C. Green, Room 1313, Ext. 2143

National Inventors' Council

Commerce Bldg.—STerling 9200

(encourages inventors to contribute ideas for defense)

Chief Engineer: John C. Green, Room 1313, Ext. 2143.

Assistant Chief Engineer: Leonard Hardland, Room 1319, Ext. 3311.

Office of International Trade

Commerce Bldg.—STerling 9200

Information Officer: Frank C. Cross, Room 3719, Ext. 3681.

Economic Cooperation Administration

800 Connecticut Ave., N. W.—STerling 6400

(administering the Marshall Plan for economic and military assistance to Western European countries)

Chief, Machinery and Equipment Branch: George H. Knutson, Ext. 2988. Machine tools and general machinery: Charles J. Baker, Ext. 2775. Agricultural machinery: William R. Nolan, Ext. 2541. Plant expansion and equipment programs involving $1 million or more: Charles E. Houston, Ext. 3071.

Iron & Steel Branch Chief: C. G. McNaron, Ext. 2633.

Nonferrous Metals Branch Chief: Ralph L. Wilcox, Ext. 3021.

Director of Information: Robert R. Mullen, Ext. 2627.

State Department

REpublic 5600

Information Officer on economic matters, international trade policy, reciprocal trade agreements, etc.: Carroll Kilpatrick, Room 2118, Ext. 5301.

Civil Aeronautics Administration

(responsible for safety in aviation)

Temporary 4 Bldg.—STerling 9200

Information Officer: Ben Stern, Room 1718, Ext. 3661. Assistants: Raymond Nathan, Room 1718, Ext. 2133, and Charles Planck, Room 1710, Ext. 3801.

Civil Aeronautics Board

(licenses air lines for operation)

Commerce Bldg.—STerling 9200

Information Officer: Edward E. Slattery Jr., Room 5036, Ext. 3806.

Technical Cooperation Administration

(State Department's agency for executing Point Four program of technical assistance to underdeveloped countries)

1901 D Street N. W.—REpublic 5600

Administrator: Dr. Henry Garland, Ext. 2162.

Chief, Industry and Government Services Division: George Taylor Ross, Ext. 3697.

Director of Information: Benjamin Hardy, Ext. 3015.

Air Co-Ordinating Committee

Commerce Bldg.—STerling 9200

Executive Secretary and Director of Information: Charles O. Cary, Room 5201, Ext. 3613.

Commerce Field Service

Commerce Bldg.—STerling 9200

Director: Carlton Hayward, Room 3890, Ext. 3641.

Selective Service System

1217 G St. N. W.—REpublic 5500

Director: Maj. Gen. Lewis B. Hershey, Room 516, Ext. 3501.

Information Officer: Lt. Col. Irving W. Hart, Room 509, Ext. 3675.

Federal Civil Defense Administration

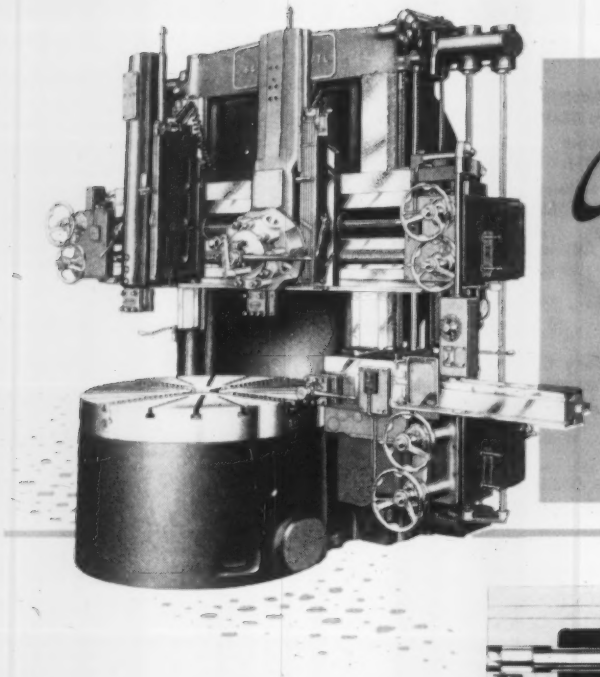
1625 I St. N. W.—STerling 0525

Information Officer: Thomas P. Headen, Room 232, Ext. 2266.

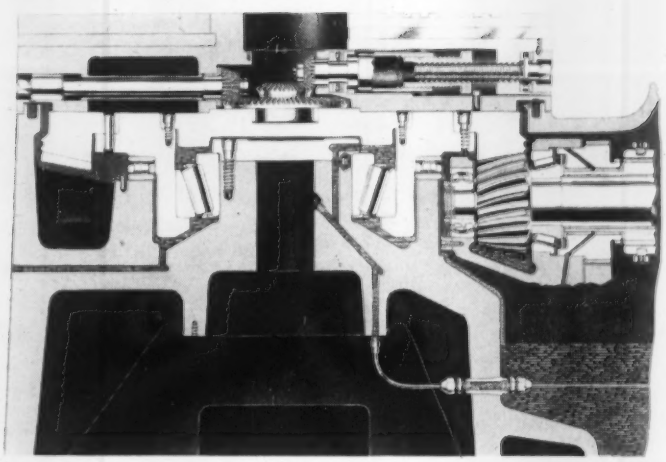
President's Materials Policy Commission

1740 D St. N. W.—EXecutive 3300

Chairman: William S. Paley, Room 301, Ext. 677.



Refinement in DESIGN



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BRIDGEPORT 2, CONNECTICUT, U.S.A.

By H. C. TUTTLE Detroit Editor

Mirrors of Motordom

Most auto men are relieved they aren't included in CMP. They think they'll be able to get along, and with less red tape, if they are left to fend for themselves

DETROIT

PRIVATELY many officials in the auto industry believe they will be as well off, materials-wise, being excluded from the Controlled Materials Plan, to take effect July 1, as they would be were they included. Those men believe that if they were put under CMP all industries should also be included, and the work entailed in directing the program would be staggering.

Individuals who dislike the announced plan most are procurement men in the small independent companies. The larger automakers expect to be able to get along all right, and many in that category are saying they do not foresee any substantial change for the worse in their problems.

With Open Arms—CMP will be welcomed by the small manufacturers of trucks and tractors, who will be covered. Lacking the purchasing power of their bigger competitors those have been subject to an increasing squeeze in materials. A few, they admit, were in serious danger of being pushed right out of the picture. To them, CMP is regarded as a godsend regardless of how snarled up it may become. Nothing, they contend, could be any worse than the situation of today.

A few people around Detroit believe that the tentative list of goods covered by CMP is an effrontery to the auto industry; that it completely ignores the substantial case which has painstakingly been built up on the essential nature of passenger cars. Since the first inkling that CMP would be "open end" most automakers have expected that their products would not be included in the plan; therefore no real amount of disappointment has been registered.

Trial Run—A substantial group of automakers and their suppliers believe the future of CMP as now tentatively set up will be decided after one quarter's operation. If defense and defense-support manufacturing activities receive more steel, copper and aluminum than they actually require and/or if the free supply of these materials is so restricted that operations of the excluded industries are scaled back substantially, a hue and cry will be raised that will be impossible to ignore. The voice of labor, many executives believe, is the one which is heard and acted upon most quickly by Washington.

If layoffs rise to any significant degree because the automakers can't get enough materials, they believe CMP will be broadened to include them or a more critical look will be taken at the uses or misuses to which CMP-programmed materials are being put.

Conversion Business Withering

Much more worrisome to most automakers than CMP is declining conversion steel production. Although directed by NPA Order M-47 to maintain the same ratio of conversion steel to total steel consumed, many users are about to have their conversion suppliers shut off shipments.

One cause of the tightening is scrap price controls which make it harder for conversion ingot to overbid regular mills for the available scrap. A few electric furnace operators who had been supplying ingots are reported to have idle capacity now because of lack of scrap. More important, however, in the overall picture is the fact that steel foundries which have been pouring ingots are now at work making castings, and the boom in alloy business makes carbon steel production in electric furnaces less attractive.

The prospects are likewise not good from the steel mill angle. Conversion has provided a method by which rolling capacity could be more fully utilized. At least one of the mills which has been an important converter for automobile companies expects that this portion of its business will decrease considerably in the next several months. On the other side of this picture are mills which are less and less able to take on conversion work, their own raw steel output being stepped up for fuller utilization of their finishing capacity.

Toll on Assemblies Higher

The hand-to-mouth basis on which most car producers are operating takes toll of assemblies every week. A study of the causes which bring about less than scheduled production reveals no pattern. It may be frames, or molded rubber parts, or sheet steel or radiators. The unbalanced situation fluctuates from week to week and company to company. A few companies continue to operate without full knowledge of how NPA's

BARGAIN BUS: Selling price of this new Fageol-Liner has been set at from 10 to 12 per cent below current level by Twin Coach Co., Kent, O., The reason: Use of mass-produced structural components from Fruehauf Trailer Co.'s Aerovan bodies, with modifications for motor coach use. Fageol-Liners, named for Twin Coach president L. J. Fageol, will be produced in 30 to 52-passenger city type busses and in several intercity models

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steel consumption limitation order applies to them. Exceptions of the official base period are still under study by NPA officials so the effects of the cutback are still to be widely felt.

Although a few producers announced at the beginning of second quarter that they would reduce operations during the period, and minor layoffs have occurred, it was not until last week that a major move in that direction was made. Kaiser-Frazer on Wednesday laid off more than 25 per cent of its hourly workers and discontinued second shift car production, which had been in operation less than a month. The layoff of about 3000 workers is for an indefinite period and resulted from a shortage of parts including radiators and springs. The Willow Run plant is being rearranged to permit automobile and C-119 packet production to go on simultaneously, and the expectation only a few weeks ago was that by year-end an additional 5000 to 8000 employees would be required.

K-F Loses $13.3 Million

Another piece of bad news was handed out by K-F in the form of its annnual report. The corporation suffered a net loss for 1950 of $13,260,000 on sales of $238,035,683. Despite its lack of profit, however, the company fared much better in every way in 1950 than it had in 1949. Loss during that year was $30,329,351 when sales were $104,474,189. The year's production was 151,415 cars against 57,982 in 1949. Total assets at year-end were $110,941,334 compared with $90,114,229 on Dec. 31, 1949, and current assets had increased to $51,811,688 from $34,852,159 in 1949. Net working capital stood at $14,109,471.

In reporting those facts to stockholders, Edgar F. Kaiser, president, pointed out that sales and production figures for 1950 were achieved even though the first four months of the year were almost devoid of production while the plant was being retooled for '51 models. Frazers started coming off the line in March, but it was May before any quantity of Kaisers were assembled. The Henry J was available only during the last quarter.

Listing the defense contracts which K-F now has, including packet manufacture, production on Wright R-1300 aircraft engines, and fuselage assemblies for Lockheed Patrol bombers, Kaiser made this comment: "One point I want to make clear is that regardless of our defense contracts we are primarily manufacturers of automobiles. As long as automobiles for civilian consumption are being produced in this country, it will be our policy to continue to produce them—at the same time, we will apply ourselves to production of whatever share may be assigned to us of the equipment required for the defense of the nation."

A man with extensive production and sales experience in the company has taken over as K-F general sales manager, succeeding Steve Girard who recently was named assistant general manager. Nils O. Eklund joined K-F in 1946, assisting in establishing the facilities at Willow Run, Long Beach, Calif., Bombay, India, and Rotterdam, Holland, before becoming midwest area sales manager.

Kaiser's cutback announcement brings back on the automotive scene the specter of transitional unemployment, which early this year was widely predicted. It seemed likely at that time that materials restrictions would bring about greatly reduced civilian goods production in advance of the time that automotive plants could be tooled up for the defense load. One of Chrysler's plants, the Plymouth assembly facility at Evansville, Ind., was in fact slated to go out of production about Mar. 1, but greater than anticipated availability of materials resulted in a stay of execution.

Auto, Truck Output

U. S. and Canada

	1951	1950
January	645,688	609,878
February	658,918	505,593
March	791,884*	610,680
April		585,705
May		732,161
June		897,853
July		746,801
August		842,335
September		760,847
October		796,010
November		633,874
December		671,622

Weekly Estimates

Week Ended	1951	1950
Mar. 24	174,674	140,196
Mar. 31	184,469	139,821
Apr. 7	158,076	133,172
Apr. 14	163,876	147,240
Apr. 21	167,000	151,613

Estimates by Ward's Automotive Reports

* Preliminary.

Defense Job for Plymouth

Now the Evansville, Ind., plant has been assigned the defense job of building hulls for the Grumman Albatross amphibious rescue plane. The contract, announced by D. S. Eddins, Plymouth president and general manager, is the first airframe order to Chrysler in the current defense program.

Acquired by Chrysler in 1928, the plant since 1935 has been used by Plymouth for car assembly. In addition, all wire harness systems for Plymouths are produced at this plant. As soon as the necessary equipment for the Grumman project is obtained, car assembly work will be transferred to Detroit. No date has yet been fixed for the shift.

Present expectations are that about half of the facility's floor space will be required for the hull assignment, and additional defense work is being planned for other space in the plant except for the area used for wire harness manufacture which will remain at that location.

The Albatross hull job, basically an assembly operation, will require about 1400 people when maximum production is reached. Although of light-weight construction—its weight being only 4500 pounds—the hull is 60 feet long, 8 feet wide and 12 feet high.

A quasi-defense item which fits into Chrysler's plans without significant plant modification is its new ambulance, which it states is designed specifically to meet civilian defense needs by providing maximum utility and versatility. In normal use the vehicle, which is mounted on the Royal chassis, is used as a four-door administrative or patrol car and seats six passengers. In emergency, however, it can be converted into a one or two-stretcher ambulance.

Ford Establishes Tank Division

Ford Motor Co. has established a tank division to be responsible for the manufacture of medium tanks at the new plant to be erected in Livonia, Mich. A. C. Moore, since late last year manufacturing manager of the tractor industrial engine division, has been named general manager.

GM Wins Seventh Safety Award

An outstanding record for safety and occupational health was hung up by General Motors Corp. last year and won for that company for the seventh time the National Safety Council's award of honor for distinguished service to safety.

GM's achievement was the more meritorious because of its all-time employment peak. With 465,329 workers the company went through the year with 99.65 per cent of them losing no working time because of occupational illness or on-the-job accident.

The Business Trend

Industrial production holds steadily at reduced level that came along with government restrictions on the end-use of steel the first of April

INDUSTRIAL PRODUCTION continues steadily at the reduced level that came along with the second quarter when government restrictions on the end-use of steel became effective.

Registering the steadiness, STEEL's industrial production index in the week ended Apr. 14 was at 217 per cent of the 1936-1939 average. For the week ended Apr. 7 the revised and final figure was 216, a slight reduction from the preliminary figure resulting from downward revisions in automobile production.

Pickup for Autos . . .

After falling precipitately during the first week of end-use controls on steel, automobile production recovered moderately in the week ended Apr. 14. Outturn of passenger cars and trucks in the United States and Canada totaled a preliminary 163,876 units, compared with a revised total of 158,076 in the preceding week, says *Ward's Automotive Reports*. Production in the final week of the first quarter was 184,494 units.

Government controls are not entirely responsible for the drop in automobile output. Part of the decline is attributed to parts shortages.

Despite controls and shortages, projection of schedules through June still places combined manufacture by car and truck producers well ahead of the first six months of 1950, the all-time record first half.

Slight Gain for Steel . . .

The seventh straight week of above capacity production by the steel industry was rung up in the week ended Apr. 21. And current capacity is the largest in history.

Only minor fluctuations in production are occurring. In the week ended Apr. 21 output was scheduled to be up slightly to 2,057,000 net tons of steel for ingots and castings, the American Iron & Steel Institute reported. One of the minor fluctuations had lowered production in the preceding week to 2,045,000 net tons.

Steel for Defense . . .

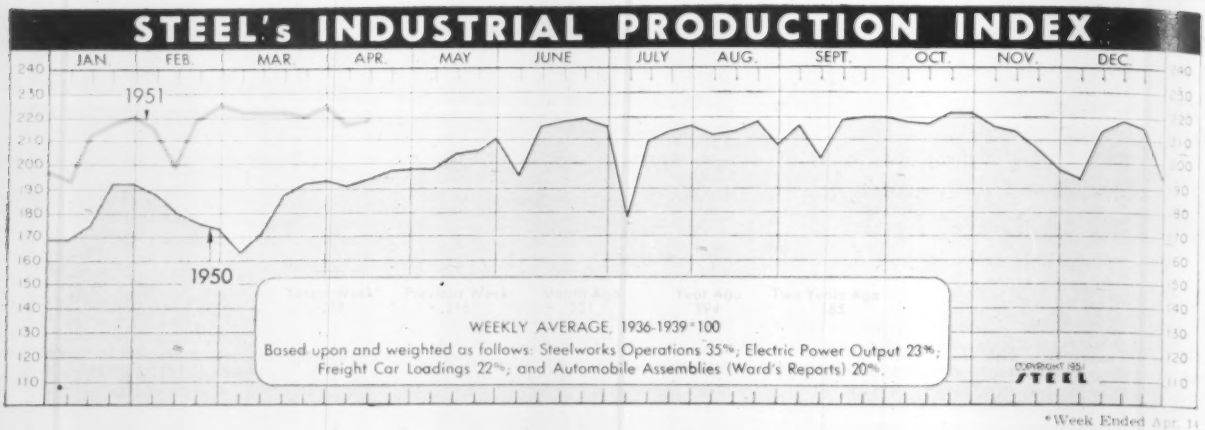
How the high rate of production and the increased capacity are being channeled to bolster the nation's defense program can be seen from the American Iron & Steel Institute's report on February shipments of finished steel from mills. Shipments of 277,317 net tons to builders of freight and passenger cars and locomotives were an increase of 163 per cent over February, 1950. Shipbuilders received 42,485 tons, nearly double the quantity of a year earlier. The aircraft industry obtained 10,880 tons, almost three times as much as in February, 1950. Shipments to ordnance and other direct military uses were 51,826 tons, more than a dozen times as great as in February, 1950.

In contrast, the automotive industry received slightly less tonnage. Shipments to it totaled 1,075,274 tons.

Plants Still in Demand . . .

Expansion of the nation's industry to provide for defense and civilian needs at the same time is continuing

BAROMETERS of BUSINESS		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	102.5	103.0	99.5	98.0
	Electric Power Distributed (million kilowatt hours)	6,747	6,736	6,903	5,863
	Bituminous Coal Production (daily av.—1000 tons)	1,517	1,689	1,670	1,954
	Petroleum Production (daily av.—1000 bbl)	6,120	6,127	6,043	4,999
	Construction Volume (ENR—Unit $1,000,000)	$311.2	$236.8	$220.9	$177.6
	Automobile and Truck Output (Ward's—number units)	163,876	158,076	182,781	147,240
	*Dates on request. †Weekly capacities, net tons: 1951, 1,999,035; 1st half 1950, 1,906,268; 2nd half 1950, 1,928,721.				
TRADE	Freight Car Loadings (unit—1000 cars)	745†	740	745	707
	Business Failures (Dun & Bradstreet, number)	172	195	185	201
	Currency in Circulation (in millions of dollars)‡	$27,166	$27,138	$27,167	$27,072
	Department Store Sales (changes from like wk. a yr. ago)‡	−9%	14%	+20%	0%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$15,606	$17,603	$17,164	$12,422
	Federal Gross Debt (billions)	$254.8	$255.0	$255.2	$255.4
	Bond Volume, NYSE (millions)	$23.6	$15.7	$23.3	$25.0
	Stocks Sales, NYSE (thousands of shares)	8,420	7,482	10,436	12,683
	Loans and Investments (billions)‡	$70.1	$70.2	$69.3	$66.6
	United States Gov't. Obligations Held (millions)†	$30,674	$30,886	$30,606	$35,920
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index‡†	171.92	171.92	171.92	156.13
	STEEL's Nonferrous Metal Price Index‡	246.2	246.7	239.2	158.2
	All Commodities†	183.1	183.3	183.4	152.5
	Metals and Metal Products†	189.9	189.8	189.3	168.5
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1951
1950
WEEKLY AVERAGE, 1936-1939=100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
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*Week Ended Apr. 14

to keep awards of contracts for industrial buildings at a high level. In the week ended Apr. 12, contract awards for industrial buildings topped other classes of heavy construction and accounted for $114.6 million of the week's $311.2 million worth of contracts, says *Engineering News-Record*.

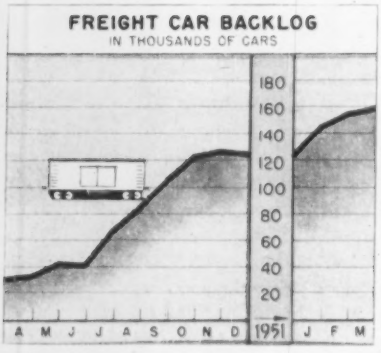
But the expected squeeze on construction has started, declares Thomas S. Holden, president of F. W. Dodge Corp. His company's 37-state construction award tabulation for March was 3 per cent lower than for the corresponding month of last year, and marked the first time since July, 1949, that a month failed to show a contract volume increase over the corresponding month of the preceding year, Mr. Holden points out. Nevertheless, he continues to believe 1951 will be a high volume year in construction. Looking further ahead, he declares: "The present prospect is that the American economy will within a reasonable period adjust itself to carrying as a normal overhead burden a military establishment of 3.5 million armed men with proportionate facilities and equipment."

Holiday Cuts Coal Output . . .

Bituminous coal production fell in the week ended Apr. 7 to 9,100,000 net tons, lowest since the railroad switchmen's strike period in February. Cause of the drop: A mine workers' holiday Apr. 2. Production in the week ended Mar. 31 was 10,133,000 tons.

Keeping an Eye on Store Sales...

For clues as to what to expect in the way of civilian business, department store sales are being watched. In the last two reported weeks, dollar volume of sales has dropped below those of the corresponding weeks of last year. In the week ended Mar. 31 the drop was 14 per cent; in the week ended Apr. 7 the decline was

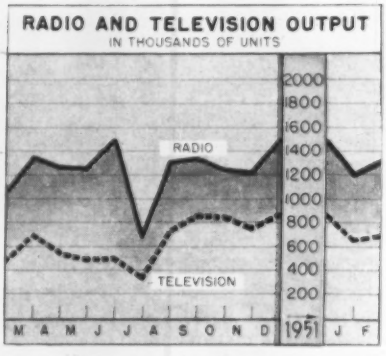


Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1951	1950	1951	1950
Jan.	26,356	9,376	144,758	19,026
Feb.	15,947	9,065	154,861	26,055
Mar.	11,271	6,201	158,619	30,539
Apr.		3,298		32,857
May		11,636		42,300
June		2,095		40,585
July		30,065		67,984
Aug.		23,850		86,156
Sept.		25,111		106,611
Oct.		21,886		122,118
Nov.		10,573		126,870
Dec.		3,326		124,489
Total		156,182		

*End of month

American Railway Car Institute

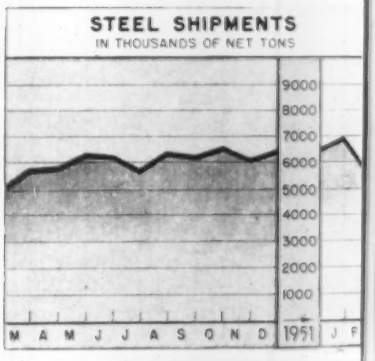


Radio and Television Output

Thousands of Units

	Radio		Television	
	1951	1950	1951	1950
Jan.	1,203	935	646	439
Feb.	1,313	1,059	679	480
Mar.		1,349		687
Apr.		1,254		543
May		1,245		486
June		1,491		502
July		666		327
Aug.		1,304		721
Sept.		1,335		843
Oct.		1,230		838
Nov.		1,216		739
Dec.		1,506		858
Total		14,590		7,464

Radio-Television Mfrs. Assoc.



Steel Shipments

Net Tons

	1951	1950	1949
Jan.	6,904,688	5,482,691	5,788,632
Feb.	5,776,229	5,134,780	5,519,938
Mar.		5,723,340	6,305,681
Apr.		5,780,453	5,596,786
May		6,252,672	5,234,862
June		6,192,438	5,177,259
July		5,668,898	4,534,855
Aug.		6,326,464	4,918,314
Sept.		6,145,354	5,236,196
Oct.		6,503,531	935,037
Nov.		6,051,145	3,296,809
Dec.		6,432,776	5,410,992

American Iron & Steel Institute

Charts—Copyright 1951, STEEL

9 per cent. Federal reserve economists attribute the 9 per cent dip mainly to the fact that Easter in 1950 fell on Apr. 9, while in 1951 it was on Mar. 25. Government economists think this isn't the whole cause. They believe the buying boom has softened.

A New Direction for Prices . . .

After being on a long uptrend that brought many new alltime records, the government's wholesale price index has reversed and marked two consecutive weeks with a decline. Latest recession was in the week ended Apr. 10, lowering the index to 183.1 per cent of the 1926 average. The preceding week's figure was 183.3 per cent. The current level is 20.1 per cent above a year ago.

Factory Jobs at Peak . . .

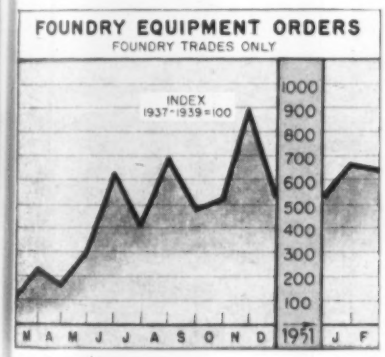
Continued high output of civilian goods and the expanding defense production program kept factory employment in March at the postwar high of 16 million attained in February. During March, employment gains in aircraft and machinery plants offset seasonal reductions in the apparel industry and the effects of work stoppages in wool textile mills.

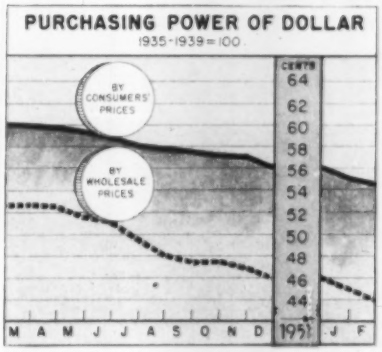
Trends Fore and Aft . . .

Man-days of idleness due to work stoppages rose in February to 1,700,000 from January's 1,200,000, but the total for those two months is far below the 11,300,000 total for the first two months of 1950 . . . Fruehauf Trailer Co., Detroit, expects its 1951 sales figure to exceed $250 million, nearly double the 1950 record sales total of $132,123,538 . . . February shipments of 128,799 net tons of commercial steel forgings, on an average working-day basis, were 8 per cent above those of January . . . A trend toward increased caution in buying is noted by the Purchasing Agents Association of Chicago. Although the policy of most buyers is 90 days or longer, there appears to be a trend toward 60 days, the association learned through its monthly survey.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction	Mar.12	Gray Iron Castings	Mar.5	Ranges, Gas	Mar.5
Durable Goods	Apr.2	Indus. Production	Apr.16	Refrigerators	Apr.9
Employ., Metalwkg.	Apr.2	Ironers	Mar.26	Steel Castings	Feb.26
Employ., Steel	Apr.9	Machine Tools	Apr.2	Steel Forgings	Feb.26
Fab. Struc. Steel	Apr.16	Malleable Cast.	Mar.12	Vacuum Cleaners	Mar.26
Furnaces, Indus.	Apr.16	Price Indexes	Apr.2	Wages, Metalwkg.	Apr.16
Furnaces, W. Air	Apr.9	Pumps, New Orders	Apr.9	Washers	Mar.26
Gear Sales	Apr.16	Ranges, Elec.	Apr.9	Water Heaters	Mar.26





Foundry Equipment Orders

	Index		Value in Thousands	
	1951	1950	1951	1950
Jan.	668.0	159.3	$3,075	$731
Feb.	638.6	113.1	2,940	519
Mar.	....	225.2	....	1,034
Apr.	....	160.6	....	737
May	....	294.9	....	1,353
June	....	622.7	....	2,858
July	....	401.8	....	1,844
Aug.	....	693.6	....	3,183
Sept.	....	483.8	....	2,220
Oct.	....	526.8	....	2,417
Nov.	....	886.5	....	4,077
Dec.	....	526.2	....	2,425

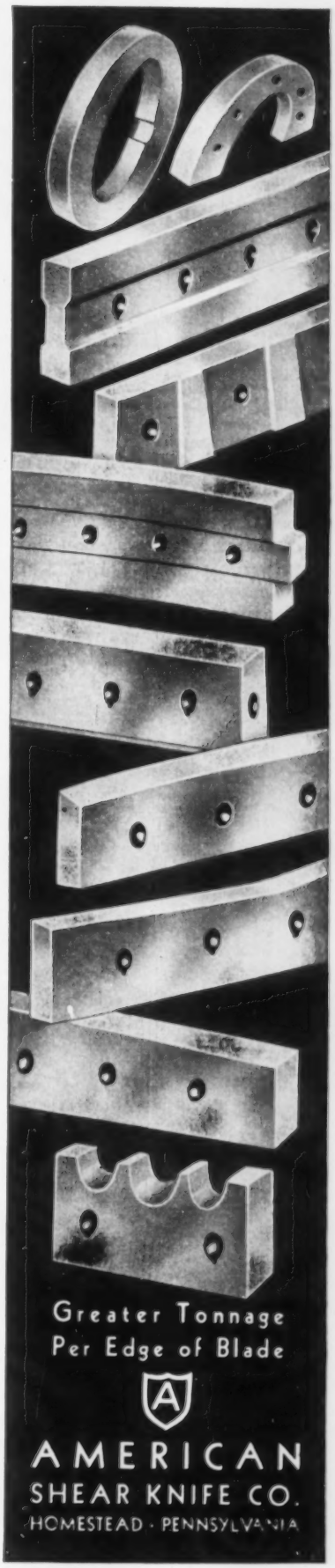
Foundry Equipment Mfrs. Assoc.

Purchasing Power of the Dollar

Cents, as measured by:

	Wholesale Prices		Consumers' Prices	
	1951	1950	1951	1950
Jan.	44.7	53.1	55.1	59.5
Feb.	43.9	52.7	54.4	59.6
Mar.	....	52.7	....	59.4
Apr.	....	52.6	....	59.3
May	....	51.6	....	59.1
June	....	51.2	....	58.8
July	....	49.4	....	58.1
Aug.	....	48.3	....	57.7
Sept.	....	47.5	....	57.3
Oct.	....	47.5	....	56.9
Nov.	....	46.8	....	56.7
Dec.	....	45.8	....	55.9

U. S. Office of Business Economics



TINNERMAN

Speed Nut®

SAVINGS STORIES

York Airs 70% Savings!

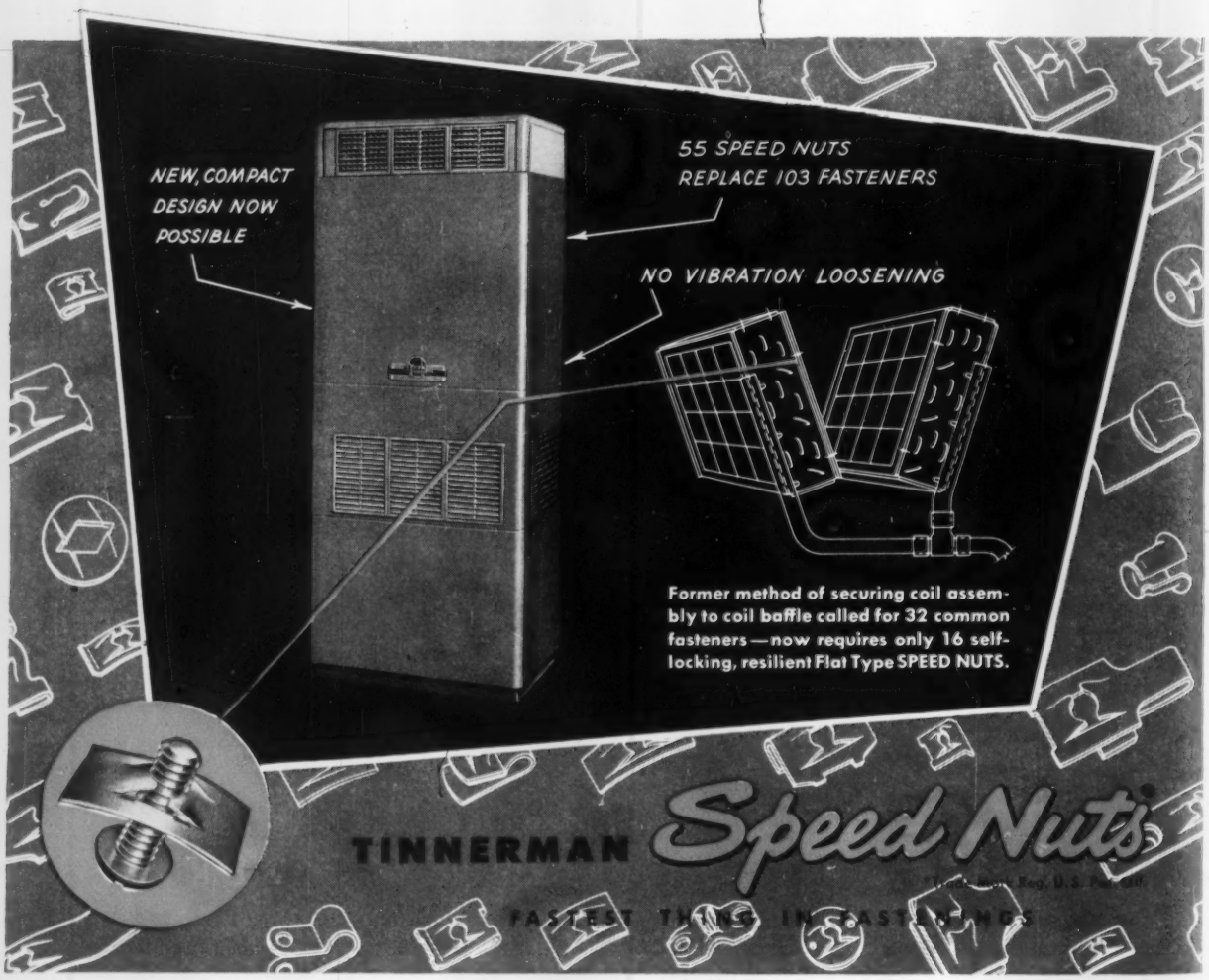
York Corporation replaces 103 fasteners with only 55 SPEED NUTS...cuts parts handling in half...makes 70% material savings.

Specifications for the latest Yorkaire Conditioner originally called for more than a hundred threaded nuts, lock washers, and other fasteners.

The Cost Saving Committee of the York engineering department, however, suggested that this unit be reviewed for possible SPEED NUT savings. A thorough fastening analysis was prepared in conjunction with Tinnerman sales engineers. Out of this report came evidence that "SPEED NUT brand fasteners could replace many of the fasteners specified . . . *and provide immediate savings of 70% in fastener costs.*"

Further savings—in assembly time, materials handling, and parts inventory—are expected when the Yorkaire hits full-scale production schedules.

Finding ways to save fastening dollars is a vitally important economy with today's narrowing profit margins. Ask for details on our comprehensive Fastening Analysis—and write for copy of new "Savings Stories." TINNERMAN PRODUCTS, INC., Box 6688, Dept. 12, Cleveland 1, Ohio. In Canada: Dominion Fasteners Ltd., Hamilton. In Great Britain: Simmonds Aerocessories, Ltd., Treforest, Wales.


NEW, COMPACT DESIGN NOW POSSIBLE
55 SPEED NUTS REPLACE 103 FASTENERS
NO VIBRATION LOOSENING
Former method of securing coil assembly to coil baffle called for 32 common fasteners—now requires only 16 self-locking, resilient Flat Type SPEED NUTS.
TINNERMAN Speed Nuts®

Men of Industry

ARTHUR KEATING
. . . Nesco Inc. chairman

WILLIAM HOWLETT
. . . elected president of Nesco

Nesco Inc., Chicago, elected **Arthur Keating** as chairman of the board and **William Howlett** as president. **Alfred Kieckhefer** was elected vice chairman of the board. **Emmett J. Gardner,** formerly first vice president in charge of manufacturing, was elected executive vice president. **Thomas Stinson,** formerly general manager, barrel division, was named a vice president, and **John Hansen,** assistant treasurer, was made controller.

Joseph G. Surmacz was named to the newly created position of chief industrial engineer of **Harnischfeger Corp.**, Milwaukee. **David A. Drewery** was named plant industrial engineer.

V. W. Coddington was named president of **Lakeside Bridge & Steel Co.**, Milwaukee, to succeed his father, the late **Paul Coddington.** Named chairman of the board, a post also held by the late executive, was **C. G. Margwarth,** who also continues as secretary-treasurer.

Eugene G. Sheasby, assistant district manager of the Pittsburgh warehouse of United States Steel Supply Co., will be assistant general sales manager of **Fort Duquesne Steel Co.**, Pittsburgh, the appointment effective May 1.

Norman A. Strang was appointed advertising manager of **SKF Industries Inc.**, Philadelphia. He succeeds the late **Robert C. Byler.**

Max Pressler has resigned as resident manager of the Buffalo office and yards of **Summer & Co.** to become general manager of the scrap iron division of **Commercial Metals Co.**, Dallas. **Philip C. Houston** was named manager of Summer's Buffalo office. He was transferred from Columbus, O., where he held a similar position.

Lamson Corp., Syracuse, N. Y., appointed **E. L. Drake** as Pacific regional manager, with headquarters in San Francisco. Mr. Drake was with Stephens-Adamson Mfg. Co.

John Barclay was appointed general sales manager, **Heil Co.**, Milwaukee, to succeed **W. E. Simons,** who has left the company. **H. F. Pugh** was named sales promotion manager in addition to advertising manager.

Whitney Chain Co., Hartford, Conn., elected **James W. Anderson** as vice president-sales, and **C. Robert Powers** as vice president-manufacturing. Mr. Anderson joined Whitney Chain in 1938 after ten years of diversified activity in the power transmission industry. He has been general sales manager since 1948. Mr. Powers was formerly consultant to the president on all phases of Whitney manufacturing activities. Prior to joining Whitney he was with Dearborn Motor Corp., an affiliate of Ford Motor Co.

Wean Engineering Corp., Cleveland, appointed as district engineers **W. H. Millan, W. E. Heineman, R. P. Popp,** and **I. W. Spraitzar.**

Thomas W. Norton was appointed advertising manager, **United States Steel Supply Co.**, Chicago, subsidiary of U. S. Steel Corp.

Four officers of **Warner & Swasey Co.**, Cleveland, appointed to new posts are: **C. W. Bliss,** formerly controller, elected treasurer; **Irving C. Bolton,** formerly treasurer, elected financial vice president; **E. B. Gausby,** formerly assistant treasurer, elected secretary; and **Warner Seely,** formerly secretary, elected vice president.

Donald N. Arndt was appointed assistant general sales manager, **Marvel-Schebler Products Division,** Borg-Warner Corp., Chicago. He was service sales manager.

Magnethermic Corp., Youngstown, manufacturer of low-frequency induction heating furnaces, appointed **B. E. McArthur** as chief engineer. For the last seven years Mr. McArthur has been with Aluminum Co. of America, Cleveland, in charge of induction heating development and application. He was previously with Electric Controller Co.

Glenn N. Hunolt was named district manager of the St. Louis office of

JAMES W. ANDERSON
. . . Whitney Chain vice president

C. ROBERT POWERS
. . . Whitney Chain vice president

H. M. Harper Co., Morton Grove, Ill.

D. H. W. Fisher was appointed assistant to the general works manager, **Oliver Iron & Steel Corp.**, Pittsburgh.

Stella R. Ellis was appointed chief chemist of **Hunt-Spiller Mfg. Corp.**, Boston. She joined the foundry's metallurgical department in 1943.

Three new directors elected to the board of **Diamond Iron Works Inc.**, Minneapolis, and **Mahr Mfg. Co.**, division, are: **James H. Binger**, general manager, valve division, Minneapolis-Honeywell Regulator Co., Philadelphia office; **Melvin J. Carlson**, retired, former vice president, Stewart Paint Mfg. Co.; and **George E. Ericksen**, treasurer, C. J. Hoigaard Awning Co.

Richard E. Stiegele was promoted to sales manager, eastern tractor equipment sales division, **Hyster Co.**, with headquarters at Peoria, Ill. He was with Caterpillar Tractor Co. for a number of years in the parts, service and sales departments. Mr. Stiegele joined Hyster in 1946. For the last two years he has been handling special assignments for the sales department at Portland, Oreg.

Franz T. Stone, president, Columbus-McKinnon Chain Corp., Tonawanda, N. Y., was appointed assistant administrator of **National Production Authority**, Washington. He is on leave of absence from the firm.

J. C. L. Brown was appointed sales manager, machinery division, **Gardner Machine Co.**, Beloit, Wis. Mr. Brown was formerly associated with Landis Tool Co. for 21 years. He was in charge of distributor sales for the United States and Canada.

HENRY D. SHARPE JR.
new president, Brown & Sharpe

Henry D. Sharpe Jr. was elected president of **Brown & Sharpe Mfg. Co.**, Providence, R. I. He succeeds his father, **Henry D. Sharpe**, who became chairman of the board. The new president entered the company in 1946. He became assistant secretary in 1948 and a director in 1949. He was elected vice president in November.

Newly elected vice presidents of **Hayes Mfg. Corp.**, Grand Rapids, Mich., are: **Eugene H. Glaettli**, controller since 1941; **Edward J. Lavalle**, factory manager since 1948; and **August L. Nelson**, chief engineer since 1940. **Edgar Washburn** of American Engineering Co. was also elected a Hayes vice president.

Alfred B. Hebeisen was appointed by **Dravo Corp.**, Pittsburgh, as staff adviser on personnel procurement to coordinate recruiting, screening and selection of salaried employees.

Donald D. Tomkinson was named executive vice president of **Daco Machine & Tool Co.**, Brooklyn, N. Y. He was vice president and general manager of Perkin-Elmer Corp., Norwalk, Conn., for ten years. Daco, specializing in electronic instrument tooling and manufacture, has placed Mr. Tomkinson in charge of overall management supervision of its defense work.

William H. Gunderson, manager of industrial relations, **Bell Aircraft Corp.**, Buffalo, was appointed manager of the war plant taken over by Bell in Ft. Worth, Tex. **James P. McNamara** succeeds as manager of industrial relations. He has been acting in that capacity since Mr. Gunderson went to Texas in January to activate the former Globe Aircraft Co. plant.

George W. Marshall Jr. and **Alvin F. Heinsohn** were elected vice presidents of **Raybestos-Manhattan Inc.**, Passaic, N. J. **W. Ward Kievit** was elected assistant treasurer; **W. H. White**, assistant secretary; and **Charles J. Geilfuss**, assistant secretary. Mr. Marshall, who has been sales manager of the asbestos products division since 1947, continues to direct sales activities on asbestos brake linings, clutch facings, asbestos textiles, mechanical packings and powdered metal friction material. His headquarters are at the company's Manheim, Pa., plant. Mr. Heinsohn will be in charge of the general asbestos and rubber division at North Charleston, S. C.

R. J. Sigafoo was appointed engineering assistant to the president of **Twin Coach Co.**, Kent, O.

John G. Patten was appointed assistant general traffic manager, **Kaiser Aluminum & Chemical Corp.**, Oakland, Calif.

Frank U. Hayes, sales manager of **Bullard Co.**, Bridgeport, Conn., and

J. C. L. BROWN
machinery sales mgr. at Gardner

DONALD D. TOMKINSON
exec. V. P. of Daco

FRANK U. HAYES
V. P.-sales mgr. at Bullard

ROBERT D. LAWSON
will be sales manager of Norton div.

WILLIAM B. LAWRENCE
Cummins Sales Corp. manager

RODNEY C. GOTT
a V. P. at AMF

a director since 1950, was elected vice president and sales manager.

Robert D. Lawson will become sales manager of **Norton Co.'s** grinding machine division at Worcester, Mass., May 1. Mr. Lawson, Chicago district manager for the division since 1946, will replace **C. Denson Day,** who has resigned to accept a position as vice president with Machinery Associates Inc., Philadelphia. **Wilfred R. Ogg** became Chicago district manager Apr. 16. He was New England sales representative for the division. **Louis J. Camarra** of the foreign division was assigned to the northern New England territory.

Erne C. Carlson was appointed president of the **National Electrical Contractors Assn.,** Washington. He succeeds the late **E. Vanderlinde.** Mr. Carlson's appointment by the NECA Administration Committee is for the unexpired term.

Charles R. Schmitt was appointed manager, lubrication sales department, **E. F. Houghton & Co.,** Philadelphia. Formerly lubrication manager for the central and western division, Mr. Schmitt was transferred to the company's main office in Philadelphia from Cleveland. He joined Houghton in 1942.

Cummins Engine Co. Inc., Columbus, Ind., announces merger of two of its sales and service organizations with Cummins Diesel Sales Corp., and appointment of **William B. Lawrence** as general manager of the sales corporation, which has headquarters at Columbus. Subsidiaries affected by the merger are Cummins Diesel Sales Corp. of Illinois, Chicago, and Cummins Diesel Sales & Service of New York Inc., New York.

Arcos Corp., welding electrode manufacturer of Philadelphia, announces transfer of **J. R. Collins** to the newly opened sales office in Chicago. He was sales representative, Philadelphia territory.

Charles K. Munn, formerly assistant treasurer, was elected treasurer of **Edgcomb Steel Corp.,** Newark, N. J. **John B. Stiles** succeeds to the office of assistant treasurer. **Keith R. Rodney** was elected assistant secretary.

Paul B. Shoemaker was appointed vice president in charge of sales, **Masonite Corp.,** Chicago.

John L. Warner was appointed superintendent of **Youngstown Sheet & Tube Co.'s** South Chicago coke plant. He succeeds **E. Kirk Harris,** retired after 35 years of service.

Rodney C. Gott was named a vice president of **American Machine & Foundry Co.,** New York. Formerly assistant to the president of AMF, in charge of commercial research and development, Mr. Gott will now supervise activities of three of the company's subsidiaries, and will also direct operations of the commercial research and development department, the Lowerator dispenser division, and sales and distribution of AMF's Wahlstrom tools and jet tobacco curer.

William F. Arnoldy was appointed special representative of **Townsend Co.,** New Brighton, Pa. He previously was with Boots Aircraft Nut Corp. and Nylok Corp.

W. M. Holland of International Harvester Co. was elected president of the **Internal Combustion Engine Institute,** Chicago.

De Laval Steam Turbine Co., Trenton, N. J., appointed **T. A. Nilsen** as district manager of a new Texas district office opened in the Esperson building, Houston.

J. F. Donnelly was named assistant manager, water heater division, Kankakee, Ill., of **A. O. Smith Corp.**

OBITUARIES . . .

John E. Doran, 57, vice president in charge of sales, **G. A. Gray Co.,** Cincinnati, died Mar. 31.

William A. McKnight, 60, retired president and general manager of **William F. Jobbins & Co. Inc.,** Aurora, Ill., died Apr. 14.

William E. Hawkins, 85, founder and former president, **American Brass & Copper Co.,** died at his home in Bay Shore, L. I., N. Y., Apr. 14.

John T. Touhey, chief industrial engineer, **Crucible Steel Co. of America,** at Syracuse, N. Y., for 25 years, died Apr. 13.

Harry T. Vail, 57, vice president, **Vail Mfg. Co.,** Chicago, died Apr. 14.

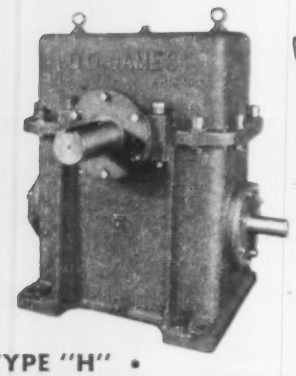
S. Duncan Black, 67, president of **Black & Decker Co.,** Towson, Md., manufacturer of portable electric tools, died Apr. 15 after suffering a cerebral hemorrhage.

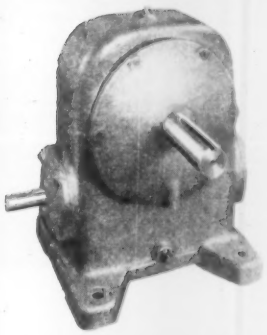
Charles C. Wright, chairman of the board, **Cleveland Tool & Supply Co.,** Cleveland, died Mar. 25.

Walter B. O'Donnell, 56, director of engineering for **International Time Recording Division,** International Business Machines Corp., New York, and former sales manager of the division, died Apr. 13, after a brief illness.

D.O.James

ESTABLISHED • 1888





for the Best in WORM GEARS AND WORM GEAR REDUCERS

TYPE "H" •

Horizontal or Vertical Drive—Each drive type comes in 15 sizes, with ratio ranges of 5.6:1 to 100:1 and from .06 to 206 horsepower.

TYPE "S" •

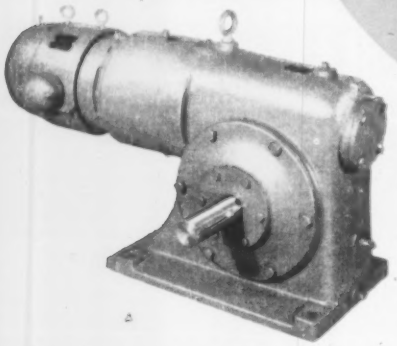
Horizontal or Vertical Drive—Each type available in 8 sizes, ratio range of 5.66:1 to 100:1 and from .04 to 15.6 horsepower.

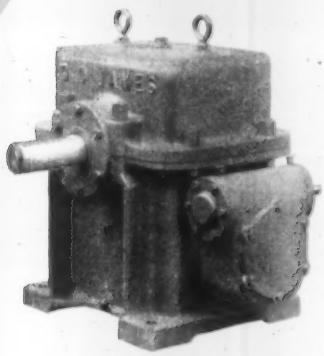
MOTORIZED •

Horizontal or Vertical Drive—Each drive type comes in 11 sizes, has ratio range of 5.6:1 to 100:1, with ⅛ to 30 horsepower, driven speeds of 310 r.p.m. to 17.4 r.p.m. Vertical drive slow speed shaft extends either upward or downward.

DOUBLE •

Horizontal or Vertical Drive—Each drive type available in 13 sizes, ratio range of 130:1 to 10000 and from .004 to 59.7 horsepower. Vertical drive slow speed shaft extends either upward or downward.



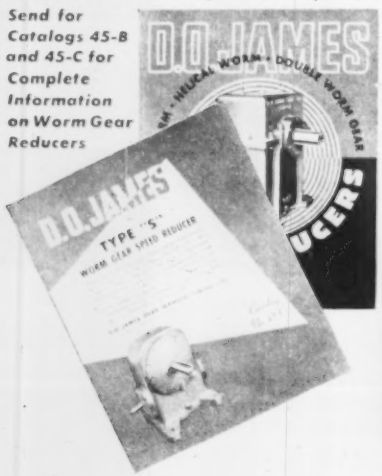


WORM GEARS

Generated on tangential feed hobbing machines by tapered and ground hobs. Made from 1" to 100" in diameter and from 24 DP to 1 DP.

Catalogs are available to users of Gears and Gear Reducers—containing valuable engineering data, specifications, weights and prices.

Send for Catalogs 45-B and 45-C for Complete Information on Worm Gear Reducers



D. O. JAMES Worm Gears and Worm Gear Reducers are designed and manufactured to have maximum inbuilt strength and to assure dependable *on-the-job* performance. The many and repeated installations of these reducers testify to their operating superiority and adaptability.

D.O.James GEAR MANUFACTURING COMPANY

1140 WEST MONROE STREET • CHICAGO, ILLINOIS

SINCE 1888—MAKERS OF ALL TYPES OF GEARS AND GEAR SPEED REDUCERS

Production and Engineering
NEWS AT A GLANCE

WHITHER POWDERED METALS?— One veteran in the field of powdered metal parts manufacture believes the technique has suffered from too much "overselling", just as did the plastics business after the fanciful predictions of an all-plastics world splattered over the slick-paper magazines and Sunday supplements during the last war. There are definite limitations as to the type and size of parts which can be produced economically by compressing and sintering iron and other metallic powders. At the same time there are hundreds of unexplored possibilities where the clever tool designer and the experienced powder compact technician can save money and produce a better product. New methods of treating the compacts, including infiltration with copper alloys or lead, gas carburizing for improved hardness, corrosion proofing after sintering by treatment with superheated steam and the like, are doing some amazing jobs in actual production work. Still surrounding the whole field of powder metallurgy, however, is that old miasma of mystery, secrecy, hocus-pocus and locked doors. Some of it springs from quacks who have nothing to conceal anyway; more of it seems to be just a habit acquired over the past quarter century.

AUSTENITE PHENOMENA— Amount of austenite formed during prolonged heating of low-carbon manganese-nickel steel, as well as its decomposition characteristics, are determined by its formation temperature and duration—gist of a study by the Naval Research Laboratory, Office of Naval Research. Mechanical property data further indicate that if austenite decomposes during cooling, tensile ductility and impact resistance will be decreased; if austenite is retained, it will decrease yield strength; if it transforms during plastic deformation it will increase tensile strength, lower elongation and reduction of area, and reduce notch toughness.

BRIGHT ZINC PLATE— Alkaline cyanide zinc plating baths with a brightener addition agent are getting the nod over acid zinc plating baths in processing steel electrical conduit. They produce uniform thickness of deposit which is fine grained, lustrous and closely resembling hot-dip galvanized coatings. Electrolyte is noncorrosive and the baths have good cleaning and covering properties tending to simplify the cleaning and plating cycles. Solution cost is higher, but overall operating expense compares favorably with the acid bath.

PLATED THROAT— Flexing steel side plates in the throat of NACA's 6x8-foot supersonic wind tunnel at its Lewis laboratory in Cleveland are 35 feet long, 8 feet high and 1 inch thick. They are supported on rollers and are moved inward or outward by 14 hydraulic screwjacks on each plate. Steel is a once-secret chrome-nickel stainless W analysis, precipitation hardening and containing aluminum and titanium. Inner surfaces of the plates are machined and polished.

ADD MILITARY SECRETS— A series of surface treatments for magnesium alloys which provide protection against corrosion far beyond anything now in use commercially, together with excellent resistance to abrasion and ability to withstand heat, is in the closing stages of development at Frankford Arsenal. Ordnance experts think the method will open the way to wider use of the light metal alloys in both military equipment and industry generally.

ON TARGET: Engineers in the refractory field are throwing away their textbooks after studying performance data on open-hearths fitted with "zebra" roof construction near the backwall. The term refers to alternate courses of basic and silica brick, either keys or wedges, which strangely enough do not interact and give important extensions to roof life in this vulnerable area . . . Zinc die cast hand grenade bouchons—"business" end of the gadget—are again in production . . . Torque magnetometers now are in use at steel mills to get quick (6 minutes) plots on torque curves of production steel samples . . . A two-cycle air-cooled multifuel diesel engine developed by the Air Force operates with every type of liquid fuel used by the armed forces, including diesel and jet fuel, kerosene and 100-octane gasoline; change from one fuel to another involves only readjustment of injection timing according to cetane number of the fuel . . . Furnace brazing of cemented carbides can be speeded by using resistors of molybdenum wire instead of nickel-chrome, since the much higher melting point of molybdenum permits raising brazing temperatures appreciably. Have to maintain a reducing atmosphere, though, to avoid oxidizing the resistors. —A.H.A.

Metalworking Outlook—p. 31 | Market Outlook—p. 149

MOVE YOUR MATERIALS

....Faster ....Cheaper

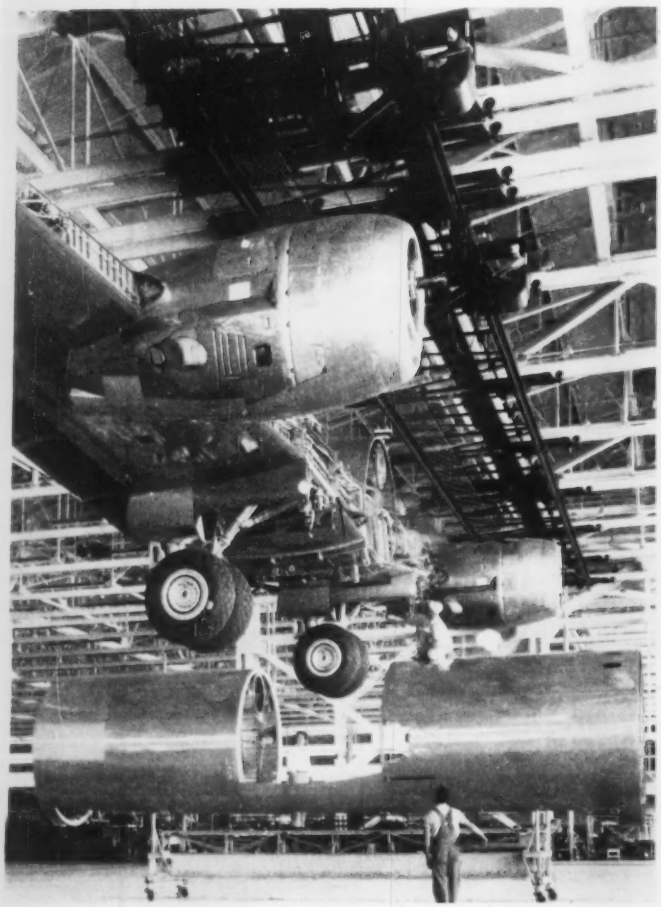
Growing importance of closer attention to cost and manpower conservation elements of in-plant materials flow is re-emphasized by field surveys

HANDLING of materials is without doubt one of the broadest and most complex elements in the overall picture of metalworking, 1951 version. Literally it encompasses everything from the man with a shovel to the powerful overhead traveling crane. Accurate statistics on equipment inventories are lacking and there are all shades of opinion on the importance and cost of materials handling. One widely accepted figure is that 80 per cent of the unskilled labor in an average plant is devoted to "moving things" in production; another that 20 per cent of industry's gross payroll is chargeable to handling of material.

But, you might ask, what is the relationship of materials handling cost to total manufacturing expense? How do plants in various size groups rate the importance of materials handling procedures? What is the life expectancy of various types of equipment—of trucks, of cranes, of conveyors, of hoists? How old are these devices getting to be in different industries? Who gives the nod on approving purchases of new equipment? Is it the materials handling engineer? the president? the production man? the purchasing agent? What about putting a trade-in value on old equipment, toward the purchase of new? What's the pitch on maintenance costs? Are users interested possibly in subscribing to a regular service plan on materials handling equipment? What are the significant shifts in materials handling techniques which the smart operator is keeping tab on?

Obviously detailed answers to such a barrage of queries might eventually take on the aspects of a second Kinsey report. And anyway they would prove much too tiresome to wade through. However, by modern scientific sampling methods, based on personal interviews with selected companies throughout the U. S., you can get some hints on broad general trends and opinions. STEEL has completed such an interrogation, in which there is admittedly a substantial margin of error possible as far as detailed figures go. Hence they will not be poured on the unwary reader here. Some general conclusions are clear, however, and the effort will be made to present and analyze them.

In-plant materials handling equipment covers a wide variety of devices which may be broken down into four general categories: Trucks and tractors, including both hand and powered types; hoists; cranes and conveyors. Applying reported equipment inventory figures for the major groups of the metalworking industry to the 21,000 plants constituting the industry (considering only those employing 20 or more persons) an approximation of the size of the



Sharply expanding aircraft production with the trend to greater size throws heavier loads on cranes like these two 10-ton units moving a bomber section

Efficient materials handling in final assembly of range tops calls for careful integration of belt conveyors, overhead monorails and power trucks

materials handling fleet can be shaped up, indicating that there are better than 17,000 gasoline powered trucks in service, some 10,000 electric trucks, 2100 gas-electrics and 2900 gasoline tractors. They are supplemented by an estimated 270,000 hand trucks, including those of the powered variety.

Similar calculations can be developed to show a complement of 225,000 hoists, about half of them electric-powered, some 18,000 air-powered, the balance hand-operated chain hoists.

Crane population in the metalworking industry approximates 36,000, over two-thirds of them being conventional overhead types, the rest gantry cranes, jib cranes and yard crawlers.

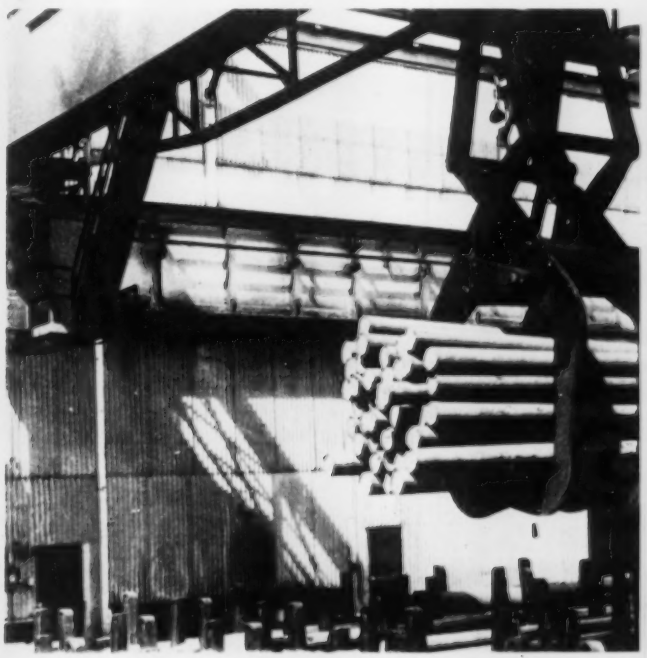
Supplementing these materials handling work horses is a wide assortment of conveyors—gravity roller, powered roller, belts, chains and overhead

Wheels, rollers, hoists and cranes; pallets, tote boxes, trucks and trains—there's a rhyme and a reason why they are the unsung "beasts of burden" throughout industry. A quick look at their costwise importance, their age, their shortcomings and who buys them is of timely significance

monorails—together with the many modifications and combinations developed to speed the movement of materials and parts through the manufacturing sequence. And finally, one of the most important adjuncts to any efficient materials handling system today is the pallet, used literally by the million in various forms of both expendable and returnable types. Many plants base their entire materials handling system around palletization, both of incoming and outgo-

Work horse of the truck fleet is the versatile lift truck, here fitted with a chain sling on the forks

Automatic locking tongs and an overhead crane collaborate to handle loads of heavy steel rounds



In considering the purchase of new equipment, what specific features would you like builders to include?

TRUCKS & TRACTORS . . .

Rubber tires, hydraulic lifts, strong enough to take the load. Some that we now have are too small. —*Automatic machinery*

Safety guard on handle and overhead guard protection. —*Gasoline engines*

Lift trucks should pass easily low obstacles; pneumatic tires; handling small items; narrow size satisfactory. —*Carburetors and filters*

Self-unloading equipped; rugged construction. —*Bearings*

Like fork trucks on some jobs, other jobs are done best with hand. Want rubber tires. Like dead man seat on electric truck. —*Machinery*

Minimum turning radius. Compact ruggedness. Simplicity of design. —*Lighting equipment*

Hydraulic lifts—standard hard tires. Safety devices. Deadman control. —*Measuring devices*

Bought plain chassis, put our own platform on it made by ourselves the width we desired. This idea could be successfully adopted by a manufacturer—making platform according to specifications. —*Brass and bronze products*

Shorter turning radius. A vertical exhaust pipe to keep gas fumes off the ground. —*Airplane parts*

All hand trucks should have grease bearings. They should have a straight duck bill instead of a tilt. Side mirror for driver. —*Battery chargers*

Pertinent Comments

Hydraulic lift, rubber tires, take sharp corners, long lasting. —*Pumps and valves*

Special attachments should be added for industrial sweeping. —*Automotive hardware*

Wider body and wheels, rubber tires, ball bearings. —*Hand tools*

Hi-lift truck—need one that will go in annealing ovens with arched ceilings. Prefer solid tires. —*Agricultural equipment*

6000-pound capacity, hard rubber tires, good color—yellow or orange, adequate horns, good safety controls. —*Steel castings*

CONVEYORS

A better oiling system for rollers.

Safety to keep same speed going forward. Keep from runaway. —*Business machines*

Web belt traveling over top of assembly bench. —*Ordnance*

Monorail with a cross bridge connecting across. —*Automotive and electronic equipment*

Portable conveyors should be equipped with a return-drip pan. —*Automobile hardware*

Ball bearings, proper lubrication, sprocket drives, shear pin safety. —*Steel castings*

HOISTS

One on which the chain does not tangle on drum. —*Electrical instruments*

Low head room. Two-speed hoist, low voltage, pushbutton switches, any safety protection. —*Business machines*

Adjustable speeds—availability of replacement parts. —*Automobile lighting*

Chain hoists would be improved if they were equipped with an air jack. Electric and air hoists are already made with all desirable and necessary features. —*Battery chargers*

Shorter drop; our ceilings are low. —*Electroplating and polishing*

ing shipments, as well as all forms of materials in transit.

What proportion of the manufacturing cost dollar is represented by materials handling? There is no simple answer to this question, since it will vary from plant to plant, depending upon the nature of the operations. As might be expected, STEEL's survey figures start from a trifling 1 per cent and range on upward to the case of one manufacturer who, after being requested to confirm a reported 75 per cent of his costs assigned to materials handling, telegraphed: "Any time you handle material in a press or any other production operation we consider that material handling cost; on this basis our figure of 75 per cent is correct."

Actually, most plants seem to figure their handling at about 5-10 per cent of total manufacturing costs, with the consensus closer to 10 than to 5. It is possible they are not entirely realistic in determining what charges should be assigned to materials handling, but nevertheless that is the way the figures are broken down currently. In the manufacture of

from Equipment Users

Satisfactory, has all features required and no additional ones necessary. Met all our requirements so far. —*Aircraft valves*

A low head in the electric hoist. —*Castings*

We need a hoist that would operate on a rail to unload sheet steel. —*Thermostats*

Would like (as standard equipment) a pan for the excess chain to fall in. Otherwise feel field is well covered for different applications. —*Die castings*

A more positive safety-stop. A stop so designed to make contact at stop, rather than break contact. —*Automotive hardware*

Would like a power hoist that doesn't take a lot of head room. Our ceilings are low. —*Springs*

Adequate limit controls. Cable lifts (chain no good in our case) Push-button control. —*Steel castings*

Safety hooks (which are not standard, but should be) —*Special tools*

Variable speeds—sturdy switch—control boxes. —*Galvanizing*

Small enough to store out of the way. —*Elevating and conveying machinery*

CRANES

Expanded metal cat walks—an auxiliary high speed hook on cranes of 15 tons and up. —*Machine tools*

Adequate limit controls—enclosed cab (heat problem here); magnetic breaking. —*Steel castings*

Safety devices, lasting qualities, ease of handling. —*Special tools*

Maximum head clearance. —*Tools and dies*

No operation cost—pushbutton control from floor. Our present cab gets in the way. —*Vacuum filters*

Grip type on tracks, about 2-ton capacity overhead. —*Machinery*

Standard crane would be suitable when we buy new one . . . made with all necessary features, today which was not the case when we bought ours 28 years ago. —*Oil tools*

Boom type extensions on bridge type cranes. Simplified electrification. —*Cushion springs*

Have you made any recent changes or do you plan to change to any new or different methods of handling materials?

Try to minimize handling—going to use more pallets—should decrease number of moves needed. —*Machine tools*

In coils for transformers we're trying to rearrange our shop so the bins are closer to the machine and materials handier for the men. —*Transformers*

Steel racks for storage. We will be using more hand trucks. Have had a need for them. —*Welding equipment*

Will install more jib cranes to minimize number of moves needed. —*Machine tools*

Believe the use of a jib type crane will expedite handling of materials. —*Aircraft parts*

Tote boxes. Reduction in handling costs. —*Automotive hardware*

Overhead cranes. Handle heavier loads with increased efficiency. —*Springs*

Gravity roller conveyors have been installed recently. —*Hardware*

We are considering conveyor equipment for spraying and handling of motors to expedite work. —*Outboard motors*

May need lift trucks and conveyors of some kind. Our plant is old and materials have to come in the same end that finished products go out. We are going to remodel it. —*Metal furniture*

More conveyors and monorails to make circulation easier than our present handling methods. —*Automobile jacks*

transportation equipment, for example, seven out of ten plants place materials handling costs in the 6-10 per cent bracket. Among manufacturers of electrical machinery, about half of the plants queried place materials handling costs in the 3-5 per cent range. In general, it appears also true that as the size of the plant decreases, in terms of employment, the proportion of manufacturing costs represented by materials handling also becomes smaller. This appears entirely logical since the smaller operator has less need for heavy cranes, fleets of industrial trucks or costly conveyor networks. At the same time he may not have learned what efficient handling of materials can do for him costwise or how, in event of an all-out military emergency, it may permit important conservation of plant manpower.

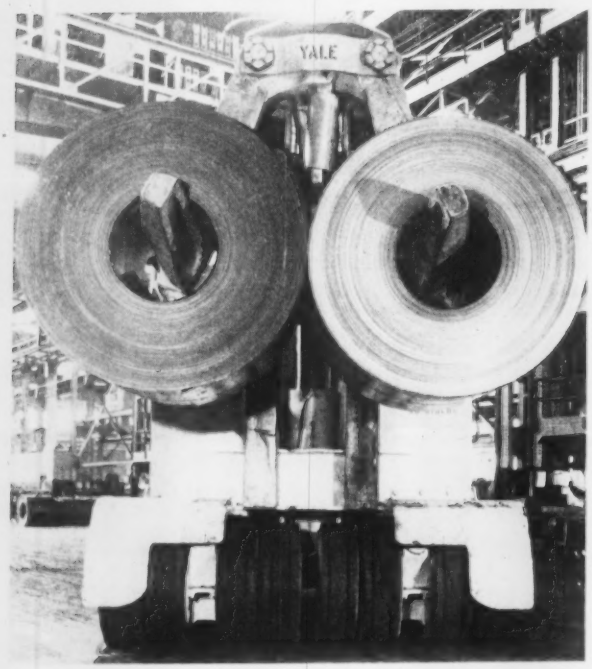
Obsolescence? The figures on present age and life expectancy of handling equipment show a fair degree of consistency. Thus, in the field of trucks, average age of equipment now is about five years and another eight years of service is in sight. The same ratio applies in the case of electric hoists. Chain hoists

are a little older on the average but are calculated to have ten or eleven more years of useful life. Overhead traveling cranes have a potential life span of 20-30 years, and average units now in service have consumed about one-third of this period. Since these units cost in the neighborhood of $15,000, their extended life as against hoists, for example, can be understood.

Have You a Materials Handling Engineer?	**NO**	8
	YES	1

Responsibility for the purchase of materials handling devices rests largely in the hands of individuals having titles associated with production phases. Few plants—only one out of nine on an average—have specially designated materials handling engineers. Rather they prefer to vest the decisions on handling equipment in top management, production supervisors and engineering personnel. Many plants have operating committees which draw up recommendations on new equipment and submit them to top management for final decision. Throughout the range of plants which STEEL surveyed, upward of 60 per cent indicated it is the man or men directing the production end of the business who shoulder the responsibility for changes in materials handling methods and purchases of new equipment.

Claimed the world's largest is this 165-hp diesel-electric split-ram truck which easily totes a pair of 40,000-pound coils of strip steel



Planning Any New Handling Methods?	**NO**	3
	YES	1

Considerable disparity of opinion on this query was noted. Many of the larger plants, employing over 500, apparently are making moves in this direction, while in the medium group there is more of a laissez-faire attitude. In small plants, employing less than 100, opinion is somewhere between the other two groups. Striking an average across-the-board, the majority opinion is on the side of no new or different techniques. One explanation might be that those answering in this fashion are not entirely aware of what is available in the way of new equipment, or of how such improved devices might pare their materials handling bill.

Equipment Maintenance Costs Too High?	**NO**	9
	YES	1

This question drew an emphatic "no" right through the list of plants surveyed. Nine out of ten consider maintenance costs satisfactory, reflecting creditably on equipment builders and the stamina they have built into their product. A corollary question on maintenance service indicated general satisfaction with service now offered by suppliers, although the appearance of a substantial negative vote might call for a little investigation by the equipment interests.

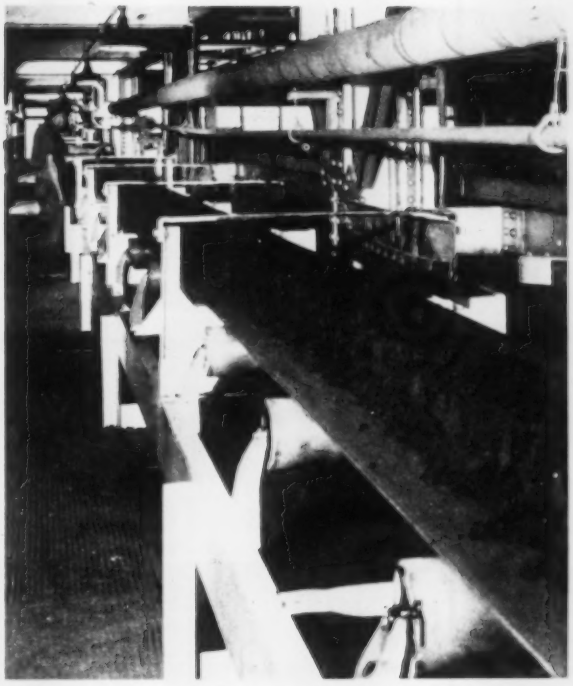
Interested in a Regular Service Plan?	**NO**	4
	YES	1

Here again the negative opinion was preponderant, averaging out to something like 80 per cent. Some plants indicated they now operate on such plans; only a smattering of expression was obtained from those interested in setting up some service arrangements.

Want a Trade-in Plan for Old Units?		
	NO	2½
	YES	1

The possibility has been seen that the introduction of a trade-in program on old materials handling equipment might stimulate manufacturers into considering more extensive replacement of older units. Little support is given the suggestion by the metalworking industry. Seven out of ten plants report their new purchasing would be unaffected by incidence of a trade-in program. The other three which support the affirmative may be deserving of some consideration by equipment builders, although there is doubt over whether it would be worthwhile to start up a rebuilding program which would be necessary to accommodate the intake of worn-out units, along with some sort of merchandising effort to keep it moving.

In summary, it appears maunfacturers, both large and small, recognize the importance of materials handling in their production cycle, are fairly well satisfied on the score of maintenance and service, keep open minds on new equipment potentialities.



Conveyor belts know virtually no limits on length and have few peers in the speedy movement of bulk materials as in this overhead foundry sand system

Increased Production Emphasized at 4th MATERIALS HANDLING EXPOSITION

FOURTH Materials Handling Exposition in Chicago's International Amphitheater Apr. 30 to May 4 will give metalworking executives a first-hand chance to see in operation the latest materials handling equipment and to observe the most modern techniques for keeping production flowing. Occupying more than 10 acres of exhibit area, both indoors and out, the show will feature scores of machines capable of lightening your materials moving and storing jobs. Exhibitors will number more than 200. This affair, sponsored by the Material Handling Institute and conducted by Clapp & Poliak Inc. will be the most extensive display ever assembled of handling equipment in operation.

Many problems of handling materials in the metal and machinery industries are to be considered at the Material Handling Conference which will be held concurrently with the next week's show. Conference theme: How to apply the fundamentals of materials handling to increase production in your business. Sponsor is the American Material Handling Society.

Objectives and Tools—At the opening session on May 1, material handling will be discussed in the light of its objectives of (1) reducing handling costs, (2) increasing capacity, (3) bettering working conditons and (4) improving distribution. The eight factors to achieve these objectives will be illustrated: Materials, quantity, time, routing, distance, environs, labor and equipment and containers.

A panel of representatives from a cross-section of industry will review bulk handling and storage methods at another meeting. Subjects to be covered include (1) definition of bulk handling, (2) measuring by weight or volume, (3) drums vs. tank cars vs. pipe lines, (4) when to handle dry or liquid, (5) manual or automatic quantity and quality control, (6) conveying vs. trucking.

Practices will be discussed from the point of view of safety, sanitation and economy. The factors of corrosion, erosion, abrasion, spillage, spoilage and waste will be analyzed. Standard and new equipment is to be illustrated.

Survey Techniques Explained — The meeting on "How to Make Surveys, Analyses and Studies" will feature an "explosion" of material handling surveys, cost analyses and cost studies with an explanation of their general compositon, purpose and application to all types and sizes of business.

How to achieve the right departmental balance, what practices of other departments can raise material handling costs, what liaison representation is needed and what aids can the material handling department offer other departments and under what conditions—these are some of the topics to be taken up at the session, "The Relationship of Material Handling to Other Departments of Your Business."

"Unit Loading and Packaging Methods" will include a discussion of pallet construction, types, materials to be palletized, methods of bonding and the economic factors involved, cost factors of unit loads with and without pallets, methods for handling a variety of material and the available accessory equipment.

Other subjects: Unitized loading of steel parts for domestic and export shipment. Solid and floating loads, internal entry units, unitizing over-the-road trucks for multistop delivery.

At the session devoted to process and production handling methods, the experts will list various recommended methods of receiving raw materials into large and small plants; they will also discuss equipment and present typical cost figures and savings. A hypothetical case involving handling of subassemblies to and from the production lines will be analyzed. A "meeting" will be held in the manager's office, with the production control engineer, material handling engineer, process engineer and packing engineer on hand.

Need More Space?—A specific warehousing situation showing involvement of all divisions in solution of specific handling problems will be the subject of the plant warehousing and shipping session. The im

PROGRAM . . .

Tuesday, May 1

9:30 A.M.—11:30 A.M.
At the Saddle and Sirloin Club (Upper) Ballroom

FACTORS OF MATERIAL HANDLING
Chairman: ALLEN K. STRONG, Materials handling section, American Cyanamid Co., New York

AMHS Chapters: Indianapolis and Louisville

Moderator: I. H. SMALL, Manager of Domestic Shipping, Eli Lilly & Co., Indianapolis

Participants: JACK O. ABNEY, Supervisor of methods and standards department, Chevrolet Division, General Motors Corp., Indianapolis. HAROLD BOCK, Materials handling engineer, R.C.A. Victor Division, Radio Corp. of America, Indianapolis. C. C. BRUMLEVE, President, Cardinal Co., Louisville. ROBERT DOLLENS, Production superintendent, Arvin Industries, Greenwood, Ind. C. R. GUSTAFSON, Materials handling engineer, American Radiator Co., Louisville. WILBUR HESSEL, Engineer, Clark Equipment Co., St. Matthews, Ky. PETER LANHAM, President, Lanham Hardwood Floor Co., Louisville. W. A. PARLON, President, Parlon Engineering Co., Indianapolis. WENDELL W. PHILLIPS, Manager, raw materials handling, Eli Lilly & Co., Indianapolis. RAYMOND E. PIGG, Material handling engineer, Eli Lilly & Co., Indianapolis. DONALD C. RHODES, chief industrial engineer, Pitman-Moore Co., Indianapolis. E. C. RUCKER, plant manager, Bentwood Products Co., Louisville. LEE RUSSELL, Plant engineer, Brown-Foreman Distilleries, Louisville.

CONCURRENT SESSIONS

3:00 P.M.—5:00 P.M.
At the Saddle and Sirloin Club (Upper) Ballroom

BULK HANDLING AND STORAGE METHODS
Chairman: TERRY L. CARTER, Material handling engineer, American Cyanamid Co., New York.

AMHS Chapter: Houston, Newark and Philadelphia

Participants: ROBERT B. CANNON, Engineer, manufactured products division, Borden Co., New York. JAMES B. McGINN, Division engineer, Materials Handling, American Viscose Corp., Philadelphia. R. G. PENNINGTON, Production pipe lines head, Esso Standard Oil Co., New York. FRANK G. WATSON, Operating department manager, Shell Chemical Corp., Houston, Texas. R. F. WEBER, General supervisor, materials handling research, International Harvester Co., Chicago.

CONCURRENT SESSIONS

3:00 P.M.—5:00 P.M.
At the Stock Yard Inn (Lower) Ballroom

UNIT LOADING AND PACKAGING METHODS
Chairman: A. GRAYSON LYNN, Assistant director, products development, Robert Gair Co., New York.

3:00 On Pallets and Skids
Speaker: LT. COMDR. WILLIAM T. PRITCHARD, SC, USN, Officer in charge, Supply Engineering Division, U. S. Naval Supply Research and Development Facility, Bayonne, N. J.

3:30 Without Pallets and Skids
Speaker: ARTHUR SPINANGER, Head of methods research and development, Industrial Engineering Division, Procter & Gamble, Cincinnati.

4:00 Latest Developments
Speaker: LAURENCE J. CRAIG, Supervisor of shipping and stores, Hyatt Roller Bearing Division, General Motors Corp., Harrison, N. J.
AMHS Chapter: New York

Wednesday, May 2

9:30 A.M.—11:30 A.M.
At the Stock Yard Inn (Lower) Ballroom

HOW TO MAKE SURVEYS, ANALYSES, AND STUDIES
Chairman: CLIFFORD C. WHITEFORD, Manager of transportation department, Ford Motor Co., Dearborn, Mich.
Speaker: JOHN G. ANDERSON, General Supervisor, material handling engineering, Cadillac Motor Car Division, General Motors Corp., Detroit.

THE RELATIONSHIP OF MATERIAL HANDLING TO THE OTHER DEPARTMENTS OF YOUR BUSINESS
Chairman: FRED A. DAHLQUIST, Service supervisor, manufacturing, Penn Salt Mfg. Co., Wyandotte, Mich.
Speaker: W. J. DERNBERGER, Supervisor, material handling, Mfg. enginering dept., Metal Stamping Division, Ford Motor Co., Dearborn, Mich.
AMHS Chapter: Detroit

12:15 P.M.—1:45 P.M.
At the Saddle and Sirloin Club (Upper) Ballroom
LUNCHEON

AMERICAN MATERIAL HANDLING SOCIETY, INC.

The Military Importance of Materials Handling
Speaker: R. ADM. M. L. RING, SC, USN, director of Supply Management, Munitions Board, Washington, D. C.

CONCURRENT SESSIONS

3:00 P.M.—5:00 P.M.
At the Saddle and Sirloin Club (Upper) Ballroom

PROCESS AND PRODUCTION HANDLING METHODS
Chairman: W. S. LEYLAND, Engineer, Canadian Fairbanks-Morse Co. Ltd., Montreal, Que.

3:00 Incoming Raw Materials
AMHS Chapter: Montreal and Toronto
Speaker: A. C. HEATHCOTE, Director of head office planning, Massey-Harris Co. Ltd., Toronto, Ont.

portance of interdivisional planning and control and improved understanding will be emphasized.

"Distribution Warehousing Methods" will feature methods of analyzing space requirements, minimizing wasted space, balancing rate of turnover-vs-space utilization; costs involved; when to consider overhead conveyor or truck systems; order picking methods; integration of inside and shipping handling systems; inventory control; bins, containers, pallets. What to do about inadequate elevators, weak floors, low ceilings, columns, pillars, poor door arrangements, inadequate dock space, correcting dock heights, are some of the other subjects scheduled to be discussed.

Costs Scrutinized—Costs are to be probed. Determination of material handling costs, breakdowns, roles of accountant, production operators and material handling engineer will be outlined, also a program for determining costs, with examples.

What material handling engineers can do to reduce damage, speed handling and cut shipping costs on railroads, trucks, airplanes and ships is the principal subject to be covered at the receiving and shipping methods meeting.

Other topics: Ways to beat wet grounds and bad weather; materials to be stored outside, methods of preserving materials, location of outside storage, construction of the storage area, how to combat bad weather.

At the closing sessions on May 3 incentive handling systems will be demonstrated: Why incentives are installed; approach to the problem; operation of the systems; what factors to consider; results in terms of production, manpower and wages.

3:30 Co-ordinated Handling Through Processing
AMHS Chapter: Buffalo

Participants: FRANCIS A. BADE Jr., Assistant to general superintendent, Bond Plant, American Radiator & Standard Sanitary Corp., Buffalo. WILLIAM G. FRANK, Engineer, Hahl Machine and Conveyor Co. Inc., Buffalo. S. H. ISAACS, Supervisor, material handling, Bonded Products Division, Carborundum Co., Niagara Falls, N. Y. ELIOT W. REYNOLDS, Superintedent of production planning, Coated Products Division, Carborundum Co., Niagara Falls, N. Y. ROBERT ROSS, Material handling engineer, Kodak Park Works, Eastman Kodak Co., Rochester, N. Y.

At the Stock Yard Inn (Lower) Ballroom

4:00 Plant Warehousing and Shipping
AMHS Chapter: Syracuse

Speaker: ALAN O. MANN, Operating vice-president, Peter F. Mallon Inc., Long Island City, N. Y.
Forum Participants: HAROLD C. DAHNKE, Material handling engineer, Solvay Process Co., Syracuse, N. Y. GEORGE A. SMITH, Material handling engineer, Industrial Planning Div., International Business Machine Corp., Endicott, N. Y. ADOLPH L. SEBELL, plant engineer, Will & Baumer Candle Co. Inc., Syracuse, N. Y.

CONCURRENT SESSIONS

3:00 P.M.—5:00 P.M.
At the Stock Yard Inn (Lower) Ballroom

DISTRIBUTION WAREHOUSING METHODS
Chairman: ALLAN F. HARDY JR., Plants engineer, Abrasive Division, Norton Co., Worcester, Mass.

3:00 Space Utilization and Accessibility
Speaker: NELSON FRIZ, Construction and maintenance assistant (Bulk Plants and Terminals) Marketing Dept., Esso Standard Oil Co., New York.

3:40 Equipment Selection
Speaker: J. LEO COOKE, President, J. Leo Cooke Warehouse Corp., Jersey City, N. J., and general president, American Warehousemen's Association.

4:20 How to Compensate for Building Shortcomings
Speaker: WILLIAM F. BURNS, Store superintendent, Gimbel's, Philadelphia.
AMHS Chapter: Boston

Thursday, May 3

9:30 A.M.—11:30 A.M.
At the Saddle and Sirloin Club (Upper) Ballroom
Chairman: L. RUSSELL ASTIE, Jones & Laughlin Steel Corp., Pittsburgh.

MATERIAL HANDLING COST IMPROVEMENT
Speaker: BERT HANSON, Manufacturing engineer, headquarters manufacturing enginering dept., Westinghouse Electric Corp., Pittsburgh.

YOU CAN SELL YOUR PROGRAM—AND MUST
Speaker: H. B. MAYNARD, President, methods engineering council, Pittsburgh.
AMHS Chapter: Pittsburgh

CONCURRENT SESSIONS

3:00 P.M.—5:00 P.M.
At the Saddle and Sirloin Club (Upper) Ballroom

RECEIVING AND SHIPPING METHODS
Chairman: K. W. FRASE, Project engineer, P. W. Voss & Associates Chicago.

Participants: A. L. GREEN, Special representative, Association of American Railroads, Chicago. HARRY F. CHADDICK, President, American Transportation Co., Chicago. E. C. MITCHELL, Assistant Superintendent, Cargo Service, United Air Lines Inc., Stapleton Air Field, Denver. CAPT. J. M. VAN ORDEN, Marine representative Eastern Territory, Matson Navigation Co., New York
AMHS Chapter: Chicago

CONCURRENT SESSIONS

3:00 P.M.—5:00 P.M.
At the Stock Yard Inn (Lower) Ballroom
Chairman: J. FRANCIS CARLE, Director of education and training, Lincoln Extension Institute Inc., Cleveland.

3:00 Ways to Beat Wet Ground and Bad Weather
Participants: RAYMOND H. DAVIS, Service supervisor, Finishes Division, E. I. du Pont de Nemours & Co. Inc., Toledo. NOEL S. O'REILLY, Traffic manager, Lee & Cady, Toledo.
AMHS Chapter: Toledo

3:20 Lumber Handling and Storage
Speaker: EDWARD C. PECK, Wood technologist, Division of Timber Physics, Forest Products Laboratory, Madison, Wis.
AMHS Chapter: Grand Rapids

3:40 Yard Handling of Building Block and Brick
Speaker: W. R. BLOMMEL, Asst. manager, Truck Division, Service Caster and Truck Corp., Albion, Mich.
AMHS Chapter: Grand Rapids

3:55 Handling Raw Materials of Paper Manufacture
Speaker: CLARENCE C. REDLON, General foreman, Material Handling and Stores, American Seating Co., Grand Rapids, Mich.
AMHS Chapter: Grand Rapids

4:15 Incentive Handling Systems
Speaker: WILLIAM J. ALLABACK, Plant Manager, Thew Shovel Co., Lorain, O.
AMHS Chapter: Cleveland

4:40 Increasing Production with Yard Handling
Speaker: FRANK C. WIER, Superintendent, material handling, Steel and Tube Division, Timken Roller Bearing Co., Canton, O.
AMHS Chapter: Cleveland

EXHIBITORS 4th National Materials Handling Exposition

EXHIBITORS	BOOTH NUMBERS
Acme Steel Co.	518
Addison-Semmes Corp.	943
Aerol Co. Inc.	422
Aeroquip Corp.	414
Albion Industries Inc.	102
All Steel Welded Truck Co.	809, 811
Alvey Conveyor Mfg. Co.	233, 234
The Alvey Ferguson Co.	420
American Chain & Cable Co. Inc	137
American Engineering Co.	304, 305
American Machinist	448
American MonoRail Co.	216, 217, 230, 231
American Pulley Co.	923
American Sales Engineers	836, 838, 840
American Steel and Iron Works	248-251
American Steel & Wire Co.	205
American Wool & Cotton Reporter	544
Americana Corp.	145
Anchor Steel and Conveyor Co.	824
Albert & J. M. Anderson Mfg. Co.	801
Anthony Co.	202
Arkansas Pallet Corp.	439, 450
Arrow Products Inc.	825
Austin-Western Co.	702
Automatic Transportation Co.	313-315
Baker Industrial Truck Div., Baker Raulang Co.	309, 310
Baldwin Locomotive Works	252-255
Barber-Greene Co.	416, 613
Barrett-Cravens Co.	519, 520, 530, 531
Bassick Co.	126
Belt Corp.	841
Benbow Mfg. Co.	451
Bond Foundry and Machine Co.	213, 214
Bosworth Mfg. Co.	412, 413
Brainard Steel Co.	521
Buda Co.	503
E. W. Buschman Co.	328
Butler Bin Co.	817
C & D Batteries Inc.	444
Chemical Engineering	448
Chemical Industries	448
Chicago Tramrail Corp.	1123
Chilton Co.	424
Chisholm-Moore Hoist Corp.	549, 550
City Machine and Wheel Co.	415
Clark Equipment Co., Industrial Truck Div.	329-336, 703
Cleveland Tramrail Div., Cleveland Crane & Engineering Co.	449, 508
Coffing Hoist Co.	108, 109
Coles Cranes Inc.	704
Colson Corp.	835, 837
Columbia Steel Co.	205
Conco Engineering Works	142
Conover Mast Publications Inc.	402
Continental Diamond Fibre Co.	920
Continental Motors Corp.	526
Conveyor Specialty Co. Inc.	527, 528
Crescent Truck Co.	532
Cyclone Fence Div., American Steel & Wire Co.	205
Darnell Corp. Ltd.	548
Dempster Brothers Inc.	206
Reuben H. Donnelley Corp.	1124
Drake Startzman Sheahan Barclay Inc.	119
Economy Engineering Co.	921
Thomas A. Edison Inc., Storage Battery Div.	232
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Electric Products Co.	124
Electric Storage Battery Co.	506
Elwell-Parker Electric Co.	301-303
Equipment Manufacturing Inc.	256
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Factory Management and Maintenance	325
Fairbanks Co.	425
Faultless Caster Corp.	417, 418
Harry J. Ferguson Co.	436
Fibre Specialty Mfg. Co.	551
Flow	103, 104, 419
Food Industries	448
Foote Bros. Gear and Machine Corp.	1002
Garlock Packing Co.	808
General Electric Co.	221, 222
Gerlinger Carrier Co.	312, 319
A. J. Gerrard & Co.	113, 114
Gerrard Steel Strapping Co.	205
Globe Hoist Co.	542, 543
Gould Storage Battery Corp.	517
Grand Specialties Co.	1110
Hamlin Metal Products Co.	934
Harnischfeger Corp.	713
Hertner Electric Co.	435
Frank G. Hough Co.	207-209
Jacob House & Sons	133
Hydraulic Equipment Co.	540, 541
Hydroway Scales Inc.	802
Hyster Co.	442, 443, 501, 502
Ideal Stencil Machine Co.	524
Industrial Engineering & Mfg. Co. Inc.	831
Industrial Maintenance	1001
Inland Wire Products Co.	942
International Staple and Machine Co.	842, 843
Ironbound Box & Lumber Co.	140
Island Equipment Corp.	235
Joyce-Cridland Co.	409, 410
Kalamazoo Mfg. Co.	223
Geo. D. Kelley Lumber Co.	1024
Knickerbocker Co.	423
Koehring Co.	554
Kwik-Mix Co.	554
Lamson Corp.	243-245
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Lansing Co.	546, 547
Thomas Laughlin Co.	905
G. B. Lewis Co.	403-405
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Martindale Electric Co.	901
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Master Builders Co.	812, 814
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Mechanical Handling Systems Inc.	936, 940
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Mobilift Corp.	237, 238
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Monroe Auto Equipment Co.	143, 144, 156
Monroe Co. Inc.	834
Monroe Sales Corp.	1020
Motor Generator Corp.	434
Motorola Inc.	1121
Moto-Truc Co.	201
National Wooden Box Association	902
Orangeville Mfg. Co.	429
Otis Elevator Co.	139
The Paltier Corp.	136
Penton Publishing Co., Publishers of STEEL, FOUNDRY, MACHINE DESIGN and NEW EQUIPMENT DIGEST	152
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Powell Pressed Steel Co.	507
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Rack Engineering Co.	127
Rapids-Standard Co. Inc.	154, 155
Ready-Power Co.	427, 428
Revolvator Co.	125
Richards-Wilcox Mfg. Co.	525, 534-536
Robbins & Meyers Inc.	218
John A. Roebling's Sons Co.	509, 510
Ross Carrier Co.	120, 128, 129, 311
David Round & Son	447
Rowe Methods Inc.	839
Ruger Equipment Co. Inc.	433
Saginaw Products Corp.	432
Sermat Conveyor Div., Peterson Products Corp.	408
Service Caster & Truck Corp.	816, 818
Service Supply Co.	210, 602
R. T. Sheehan Co.	257, 258
Sherman Paper Products Corp.	440, 441
Signode Steel Strapping Co.	431
Silent Hoist & Crane Co. Inc.	505
Sisalkraft Co.	430
Skarnes Engineering & Supply Inc.	246, 247
Spaulding Fibre Co. Inc.	826
Speedways Conveyors Inc.	318
Standard Conveyor Co.	148, 149
Stanley Works, Steel Strapping Div.	538, 539
Star Kimble Motor Div., Miehle Printing Press and Mfg. Co.	132
Steel-Parts Mfg. Co.	411
Sterling Bolt Co.	407
Sterling Lumber & Supply Co.	239, 240
Stevens Appliance Truck Co.	406
Teleflex Inc.	820
G. H. Tennant Co.	215, 225, 226
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Thew Shovel Co.	316
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Toledo Scale Co.	228, 229
Tote System Inc.	821
Towmotor Corp.	622, 323, 601
Tractomotive Corp.	904, 908, 1005, 1007
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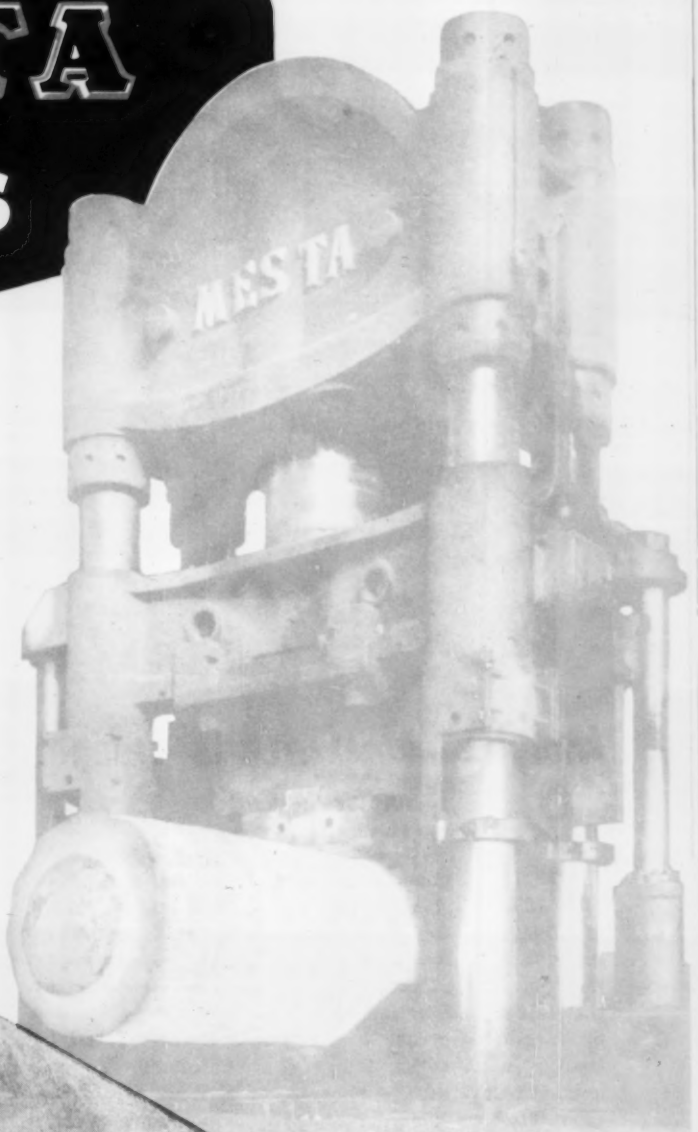
Yale & Towne Mfg. Co.	402-A, 317, 324, 701, 123

MESTA Forgings



Mesta Forge Shops are equipped to produce, from raw material to finished product, carbon and alloy steel forgings in all sizes required by industry, including crankshafts, marine parts, rotor shafts, rolls, pinions, pressure vessels, pump blocks, table rollers, coupling halves, spindles, gears, and many others.

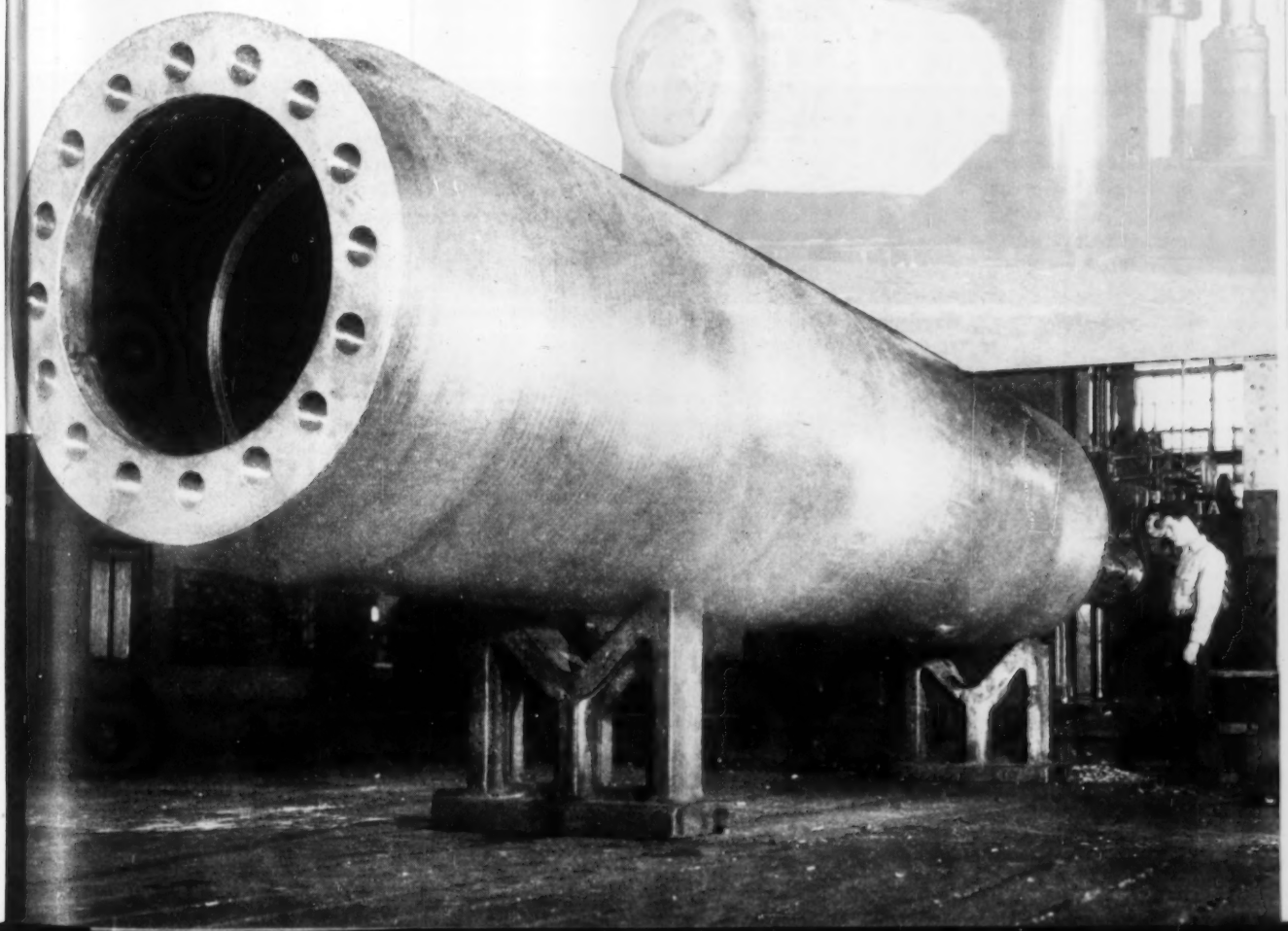
The illustration shows a one-piece forged steel high pressure accumulator bottle for a 6,000-ton hydraulic forging press. It was produced complete in the Mesta Plant.

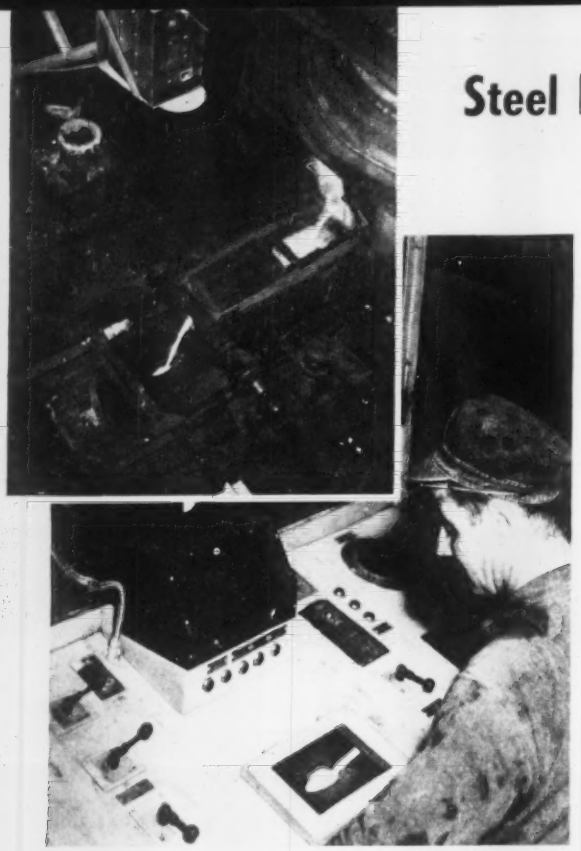
Write for descriptive forging literature.

DESIGNERS AND BUILDERS OF
COMPLETE STEEL PLANTS

MESTA MACHINE CO.

PITTSBURGH, PENNSYLVANIA





Steel Pouring Viewed at Distance

WIRED television is making gains in industrial uses where heat and cold, fatigue, safety and distance make it difficult or impossible for an operator to work close to the operation being viewed. Babcock & Wilcox Tube Co., Beaver Falls, Pa., is using the Utiliscope built by Diamond Power Specialty Corp., Lancaster, O., to save manpower, promote safety and control quality in the continuous casting of steel billets.

Pouring operation is very critical. To get sound billets without spongy spots or air inclusion, the mold must be kept full to an exact level. Formerly it was necessary to station a man directly at the mold top to watch the pouring, ready to signal the operator 50 feet away. There was always a possibility of a misunderstanding, hazard was high and discomfort from radiant heat became unbearable.

A camera with a long focus lens is suspended above the molten metal surface in the mold as shown in the upper photograph. It transmits an exact instantaneous and continuous picture of the molten metal level to the viewing screen which is placed in the control panel as shown in the lower illustration. The operator not only sees the pouring at close range but works in safety and comfort.

Molybdenum Corrects Temper Embrittlement from Phosphorus

By JULIUS J. HARWOOD

Metallurgy Branch, Office of Naval Research

EFFECTS of phosphorus on the toughness of AISI-SAE 1340 and SAE 5140 steels have been studied by M. Baeyertz, W. F. Craig and J. P. Sheehan of Armour Research Foundation, Chicago, with corollary work on the effect of molybdenum in counteracting the detrimental action of phosphorus. They noted a progressive decrease in toughness (as measured by change in transition temperature in Charpy V-notch impact tests) as the phosphorus content was raised from 0.020 to 0.036 per cent. It should be noted that the highest level of phosphorus employed is still within the AISI-SAE specifications for the alloy grades investigated. The detrimental effects of phosphorus can be seen in the following table of transition temperatures of 1340 steel tempered at 1150°F, for two different cooling rates from tempering temperature:

% P	Transition temperatures, °F, with cooling rate after tempering of Water quench	¼°F/min
0.012	—115	0
0.020	— 60	150
0.028	— 30	180
0.036	— 40	225

It is apparent phosphorus not only increases the transition temperature but also increases the susceptibility of the steel to temper embrittlement. The greatest effect of phosphorus for SAE 1340 appears to be in the range of 0.012 to 0.020 per cent, with an additional effect on susceptibility to temper brittleness for phosphorus contents above 0.020 per cent. This SAE 1340 steel with a phosphorus content that would be considered to represent good open-hearth or electric furnace practice still might show a high degree of susceptibility to embrittlement.

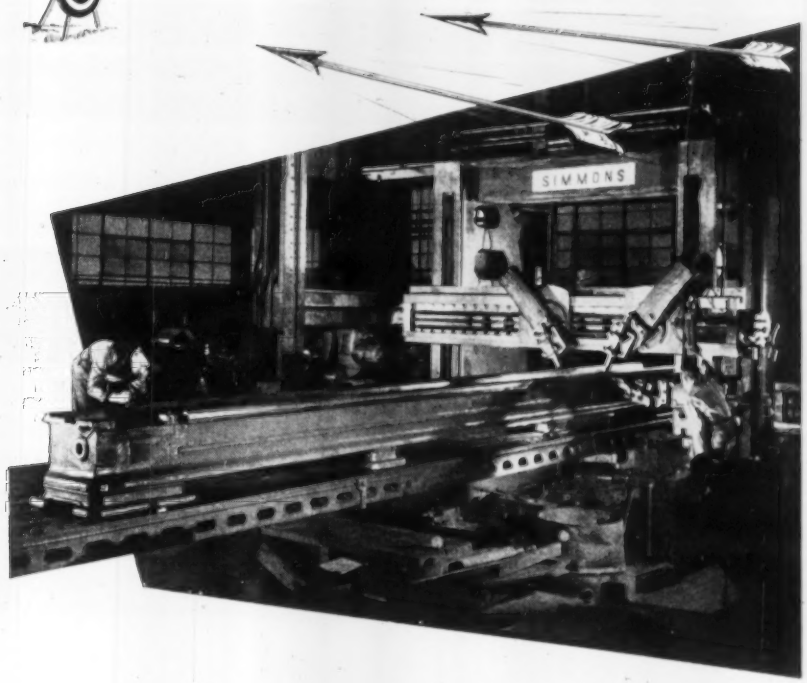
The investigators also found that molybdenum counteracts the effect of phosphorus and demonstrated that a good tolerance for phosphorus in tempered martensite can be obtained by replacing a part of the manganese in 1340 by molybdenum or by replacing a part of the chromium in 5140 by molybdenum, without essential alterations in the hardenability of these two grades. The beneficial influence of molybdenum is shown by the following table:

% P	Alloy grade	Transition temperature, °F, with cooling rate after tempering of Water quench	¼°F/min
0.020	1340	— 60	150
0.027	0.10Mo, 1.39Mn	—120	— 45
0.025	0.18Mo, 1.29Mn	—140	— 95
0.036	1340	— 40	225
0.033	0.12Mo, 1.43Mn	—105	— 15
0.035	0.18Mo, 1.24Mn	—115	— 75
0.020	5140	—100	35
0.023	0.11Mo, 0.52Cr	—100	— 40
0.021	0.18Mo, 0.44Cr	—145	— 95
0.036	5140	— 60	160
0.037	0.11Mo, 0.55Cr	— 80	20
0.041	0.16Mo, 0.50Cr	— 80	— 5

While the 5140 steels show somewhat less loss of toughness than the 1340 steels, when compared at the same phosphorus content and cooling rate, the maintenance of toughness in the 0.18 per cent molybdenum modification of either grade is exceptional, even for phosphorus contents of 0.035 per cent and under heat treating conditions which ordinarily would result in severe embrittlement. It was also observed that the transition temperature of the tempered steels was dependent upon the Mo/P ratio and the rate of cooling from the tempering temperature.

"May the best man win."

said the customer



Why Simmons is the logical choice to rebuild your heavy machine tools

A prominent Eastern forge shop had *three* large lathes which it wanted restored to peak efficiency. It decided to let the original builder and Simmons rebuild one lathe each. The third machine would be given to the firm delivering the greatest value. To the competing sales engineers, the buyer said: "May the best man win." *Simmons got the additional order.* Here's why:

At our plant the lathe was completely dismantled to the main castings...all sliding surfaces renewed by planing, grinding or scraping...sub-assemblies dismantled and, wherever necessary, shafts, gears or bearings replaced. The machine was tested under power and shipped with an unqualified guarantee to perform up to its capacity when new.

That's how it is with every machine tool *engineered rebuilt* by Simmons.

Now that deliveries of larger machine tools are getting longer and longer—you will want to be sure that your equipment is in peak condition. Then give machine tool rebuilding a priority in getting ready for the dual requirements of defense and consumer production. Follow this practice of leading metal-working manufacturers:

1. **Take a *physical* inventory of your machine tools, particularly the heavy, hard-to-replace ones.**
2. **Select those in need of rebuilding or modernizing that can be spared temporarily.**
3. **Call on Simmons to see the program through by *Engineered Rebuilding* in the world's largest, best-equipped plant.**

You can start by sending us a list of your machines that require rebuilding. We'll promptly quote prices and deliveries and send you case examples of machine tools rebuilt "The Simmons Way."

SIMMONS MACHINE TOOL CORPORATION
1721 North Broadway, Albany 1, N. Y.

SIMMONS ENGINEERED REBUILDING
Gives Machine Tools a New Lease on Life

Electric Fusion Submerged-Arc Process Welds Expanded Steel Transmission Pipe

Welding is performed by using twin arcs, spaced about ¼-inch apart, one using alternating current and the other direct current. Speed of welding depends on wall thickness of the pipe being produced, and approximates 4 feet per minute

By J. H. MIDDLETON
Chief Metallurgist, Gulfsteel Division
Republic Steel Corp.
Gadsden, Ala.

EXPANDED steel transmission pipe is being produced by the electric fusion submerged-arc weld process at the Gulfsteel Division of Republic Steel Corp. The mill was designed to manufacture pipe with outside diameters of 20 to 30 inches inclusive, wall thicknesses of ¼ to ½-inch inclusive and lengths from 27 to 31 feet 6 inches. Pipe produced is used principally for transporting natural gas at high pressures.

Various steps in the process are basically the same for all size pipe. These can be grouped into three general divisions: First, preparation and formation of the flat plate into cylinders; second, welding; and third, sizing and finishing of the pipe.

A combination 112-inch, three-high sheared and universal mill rolls the plates used to manufacture the pipe. These plates are stocked in the building housing the equipment that performs the first division of operations.

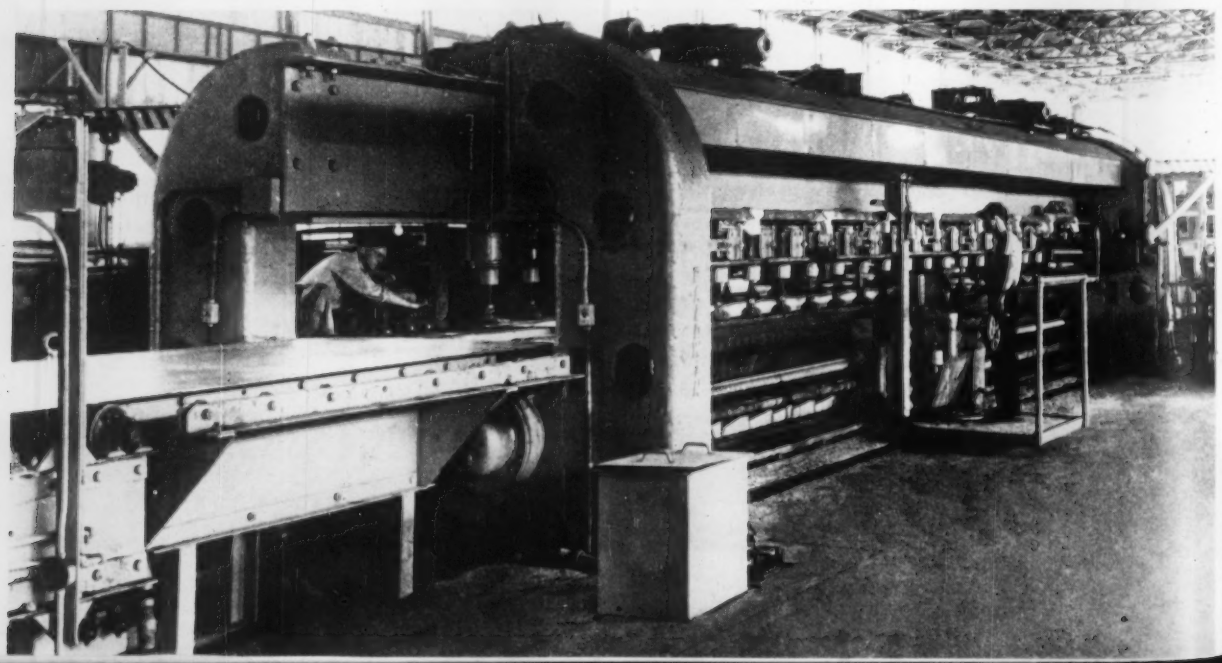
Plates are handled in and out of stock by a 15-ton electric crane equipped with twin magnets on one hoist and a spreader-type chain and stirrup sling on the other. Plates are transferred from stock to an area parallel to, and at the side of, the beginning of a roller-type conveyor line. This area and the first section of the conveyor is served by a 5-ton, half-gantry crane equipped with three electric magnets on a spreader. This arrangement permits placing one plate at a time on the conveyor.

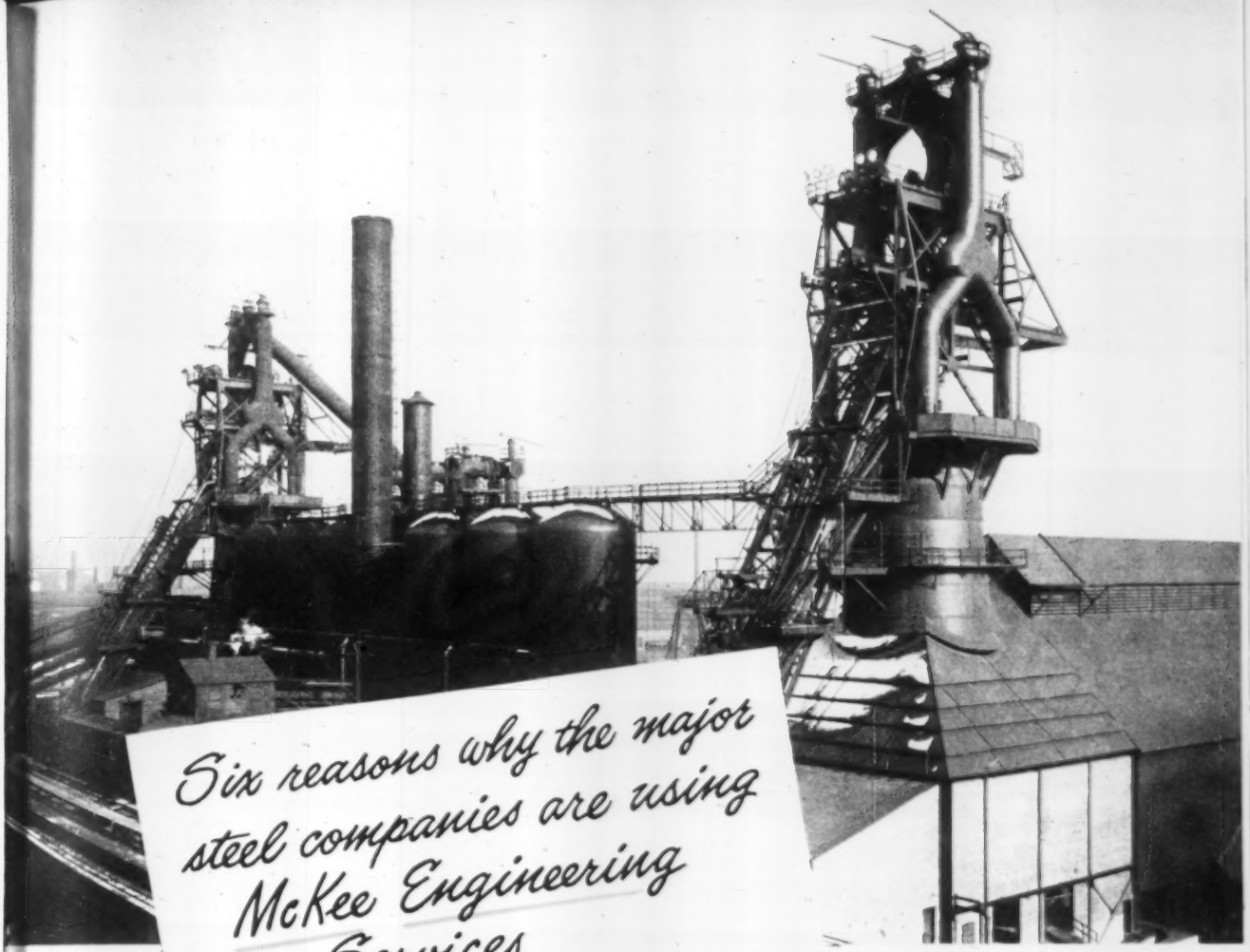
Any out-of-flatness is removed in a standard plate roller leveler. The plate is delivered onto a conveyor where it is moved forward by traction from motor driven, rubber-covered wheels, located above the plate. Vertical movement and pressure is transferred to these wheels by a reversible air cylinder. The wheels contact the plate's top surface directly above a supporting idler roll. This arrangement is used to move the plates along that part of the preparation line where they remain flat.

Use 36-Foot Dual Planer—Because a perfect cylinder is desired, both lengthwise edges of the plate are planed parallel and to a predetermined width depending on gage and diameter of pipe being produced. Edge planing is done on a 36-foot dual planer. The plate is conveyed onto the planer bed and clamped down along both edges by individually acting air cylinders. This clamping pressure prevents any movement during planing. Planer bed can be adjusted to various widths desired but is fixed for any given pipe size.

Carriages mounted on each side move and are pow-

In order to produce a perfect cylinder, both lengthwise edges of the plate are planed parallel and to a predetermined width by this 36-foot dual planer





Six reasons why the major steel companies are using McKee Engineering Services

1 Arthur G. McKee & Company have been recognized since 1905 as a leading engineering firm engaged in the design, engineering and construction of iron and steel plants.

2 McKee experience includes all types of iron and steel production facilities from preparation of raw materials to finished steel.

3 The McKee organization has the scope and resources to undertake any steel plant project regardless of size or location. Completion dates of new projects are contingent on present schedules.

4 McKee supplies every kind of technical knowledge and specialized skill necessary for the completion of your project.

5 McKee engineers have originated advances in blast furnace and steel plant engineering and in sintering plant design and equipment.

6 Men in the Iron and Steel Industry know from long experience that the McKee method of coordinated engineering reduces plant costs and speeds completion—that ***McKee Engineering means Assured Results.*** That's why they buy McKee Engineering.

DESIGN, ENGINEERING AND CONSTRUCTION FOR THE IRON AND STEEL AND PETROLEUM REFINING INDUSTRIES

McKee
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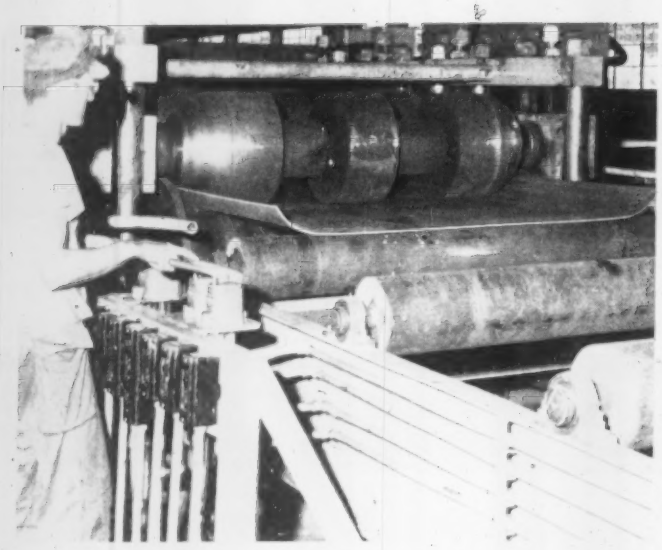
Arthur G. McKee & Company • Established 1905

Headquarters: McKee Building, 2300 Chester Avenue, Cleveland 1, Ohio. *New York:* 30 Rockefeller Plaza, New York 20, N.Y. *Tulsa:* 918 First National Bank Building, Tulsa 3, Okla. *England:* The Iron and Steel Division of Arthur G. McKee & Company, is represented by Head, Wrightson & Co., Ltd.



Edge forming of the plate is effected by passing it through four sets of rolls. Finished edges are formed to a radius of the cylinder to be completed in the next operation by the pyramid rolls

ered through triple-threaded screws. Each carriage carries a reversible tool head equipped with five tools cutting on the forward motion and five tools cutting on the return motion. Each tool can machine approximately 1/64-inch from the edge of a 5/16-inch plate. Edge planing of the plate is very important, as will be noted later. The plates must also have square ends and this work is done on two plate shears set across the conveyor line. Ends are sheared while the plate is held tightly against straight guides bearing along one planed edge. Shearing is done one end at a time on separate shears so the material can be held perfectly flat.

The plate is conveyed along another section of the line after it has been planed and sheared to the desired rectangle. Shot blast nozzles mounted on the sides of this section are directed at the top and bottom surfaces along the plate's extreme edges. A vacuum line picks up spent shot material and returns it to the feed hopper. The target area and nozzles are completely enclosed by the vacuum line's suction cups. Purpose of this operation is to remove oxides and foreign material from both surfaces along the edges. This is done to reduce flux contamination and to promote good welding during a later operation.

Forms Plate Into Cylinder—The next two operations form the plate into a cylinder. First operation is that of forming both longitudinal edges of the plate to make it resemble a wide shallow trough. This edge forming is accomplished by passing the conditioned plate through four sets of rolls, which are adjustable for various width plates and for different gages of the same width. Aided by guides, and acting as pinch rolls, the first pair of rolls keep the plate moving forward squarely into the second set of rolls. Plate edges are turned up approximately 25 per cent of the total amount necessary by the second set of rolls. The next two roll sets are shaped to complete progressively the edge forming. Finished turned-up edges are formed to a radius of the cylinder to be completed in the next operation.

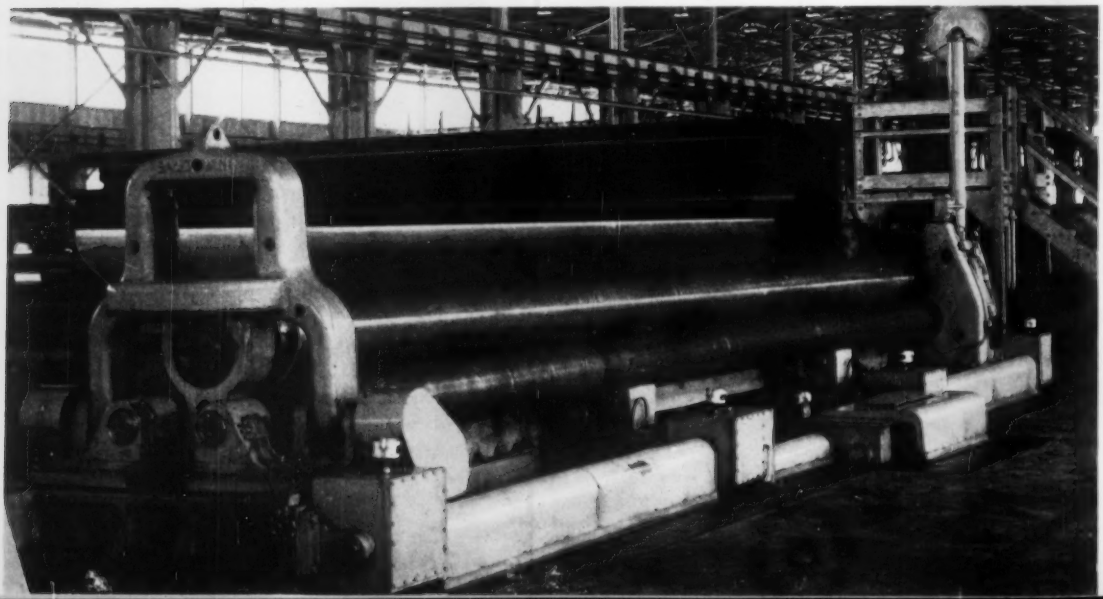
The edge formed plate is conveyed sideways into a set of pyramid rolls. Diameter of the top roll is varied depending on diameter and wall thickness of the pipe to be made, while the two bottom rolls are constant for all sizes.

Lift arms located at the end of the chain conveyor tilt the partially formed plate sideways, which allows the plate's turned-up edge to enter under the top pyramid roll. After the formed edge is in position, the top pyramid roll is lowered into contact with the inside curved surface along the edge. The cylinder is formed completely in two or three passes by rotating all three rolls. The end bearing for the top roll, which is supported on a hinged frame, is lowered, and this allows the formed cylinder to be pulled off the top roll. This operation forms a cylinder with a uniform, narrow opening and with square ends.

Ends Are Tack Welded—Cylinders are rolled by gravity to the next operation, where they are lined up, one behind the other, lengthwise. Longitudinal edges are matched and temporarily clamped in place

Paper presented before the Birmingham regional meeting of the American Iron & Steel Institute, December 1950

Final forming of the cylinder takes place in this set of pyramid rolls. Two or three passes are required



with the seam openings at the top. The square ends are tack welded together on each side of the seam opening, each weld being approximately 3 inches long. These welds hold the longitudinal edges, and also the wall thickness, in line for seam welding, which is the next operation.

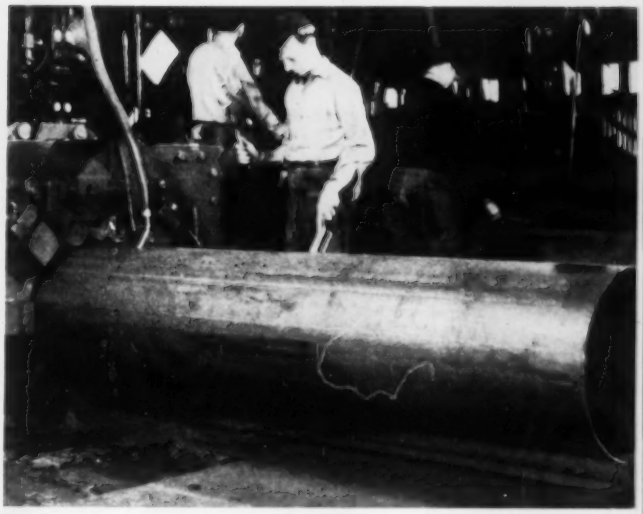
Seam openings are brought together by pushing the line of formed cylinders through a welding cage, where they are welded on the outside. A balance in operations is maintained by use of three outside seam welders. The force needed to push the cylinder through the welding cage is transmitted through three separate power driven hour-glass pinch rolls, located outside and at the top of the cylinder.

These rolls are powered through variable speed drives and worm gear reducers. Necessary traction on these rolls is produced by a spherical-type roll inside the cylinder and located just beneath the outside roll. This spherical roll is supported by wide, thin arms that are fastened to a frame above, and extend down through the narrow seam openings. These supports are held in proper tension by heavy coil springs.

Any oil or grease present is burned off the cylinder wall on both sides of the opening by heating to approximately 200°F at a point 24 inches ahead of the welding cage. Inferior welds would result if this foreign material were present.

When the cylinder reaches the welding cage, the opening is closed and edges held tightly together by seven sets of five tandem-mounted rolls which are equally spaced around the cylinder's circumference.

Weld Puddle Not Disturbed—In addition to these rolls which bear on the pipe body, there are two sets of 14 small rolls supported by heavy, water cooled longitudinal bars. These small rolls bear on the cylinder's top surface on each side of the seam. They prevent any relative movement of the edges to be welded and prevent disturbance of the weld puddle while still freezing and cooling.

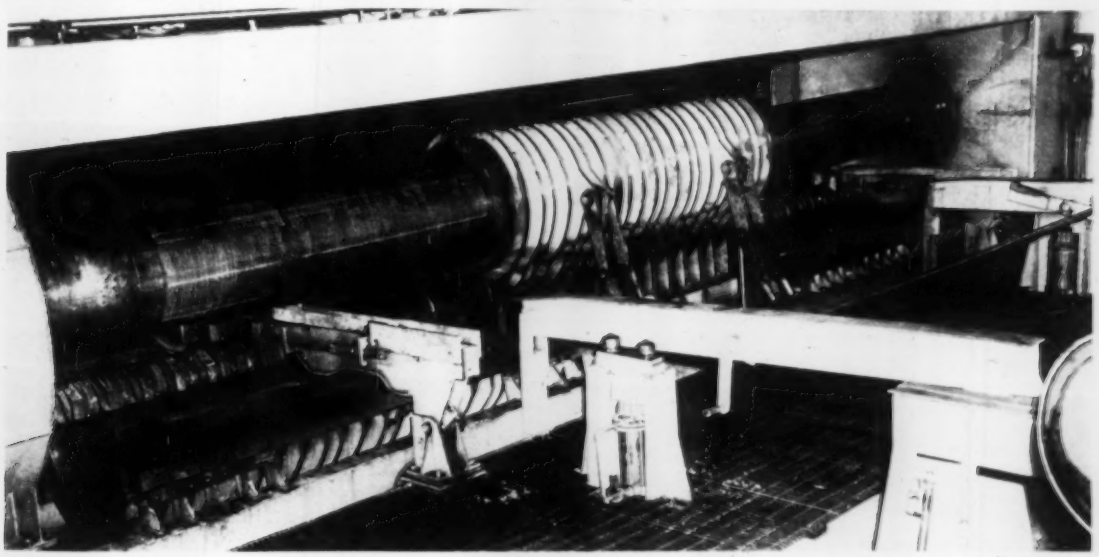


Outside seam welding is handled by use of twin arcs, spaced about ¼-inch apart. One uses ac and the other direct current. The operator removes spent, fused flux and inspects the weld simultaneously

Deposited metal is given about 24 inches of travel to cool and grow strong by making the outside seam weld about 24 inches ahead of the welding cage's exit end. Welding is performed by using twin arcs, spaced about ¼-inch apart, one using alternating current and the other using direct current. The direct current arc, known as the leading arc, makes the first contact with the seam. Welding speeds depend on the wall thickness of pipe being produced, but will approximate 48 inches per minute.

A water cooled, copper backup bar is used to prevent welding arcs from burning through the seam. This bar is located inside the cylinder and slides along the inner surface of the seam just beneath the weld-

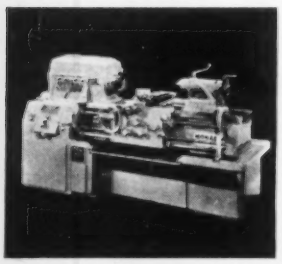
In this hydraulic expander, pipe is brought up to desired diameter by use of a water pressure approximately 500 psi higher than the test pressure required. About 1.5 per cent expansion is required to bring the outside diameter of the pipe up to ordered size



Keep in Step with Monarch and Keep Ahead of Obsolescence

13" MODEL 70 TOOLMAKER'S LATHE

The lathe that has everything. The ultimate for master toolmakers. Unequalled for accuracy, speed and convenience of operation. Features include—speed range of 12 to 2000 R.P.M., develops up to 20 H.P. depending on speed, four directional rapid traverse and built-in constant surface cutting speed. Tailstock hydraulically operated and easily repositioned.

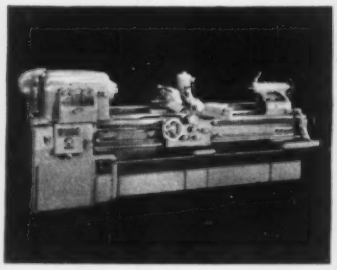


SERIES 60 ENGINE AND TOOLMAKER'S LATHES

In 12", 14", 16" and 20" swings. Offering such typical Monarch features as totally enclosed end gearing and gearbox—automatic pressure lubrication—all anti-friction bearings—hardened helical gears in headstock—American Standard Camlock Spindle Nose—flame-hardened and ground integral bedways—hardened alloy steel working parts.

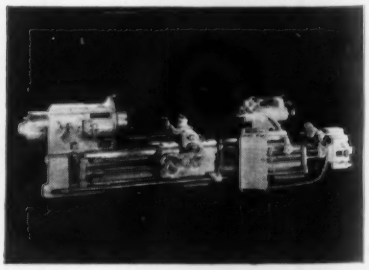
THE AIR-GAGE TRACER

Turn, bore or face using a flat or a round template. With or without fully automatic cycle and infinitely variable feed. Applicable to complete range of sizes from 10" to 32" swing.



ROLL TURNING LATHES

For the contour turning of steel mill rolls from a template. Reduces turning time up to as much as 75 to 85%. Closer accuracy which can always be duplicated exactly. Eliminates the need for hundreds of expensive form tools. Much easier to operate than conventional roll turning lathes.



THE MONARCH New Development Building—where tomorrow's lathe developments are planned today!

WHEN YOU LOOK more closely at the Monarch lathes below, there are two important points to keep in mind. First, you'll find in them every desirable production and design feature required to meet the highest standards—features playing a basic performance part in a line of lathes noted for improved accuracy, faster production and longer life. Secondly, it will pay you to remember that, while many of these features are now standard in the industry, *every one of them was developed and first introduced on Monarch turning equipment.*

MONARCH USERS, in other words, have through the years been first to benefit from each of these developments. And they've benefitted doubly. Through cost reduction and product improvement on one hand. On the other, through the purchase of lathes destined for a longer, unrivalled production life.

AS A MONARCH BUYER TODAY, you face the same enviable prospect. Our company, founded in 1909 and built on the principle of continuous research and development, devotes a major portion of its energies today to that principle. Our New Development Building, with its equipment and staff, is the physical symbol of our determination that the lathe improvements of tomorrow will appear first on Monarch products. It implements our promise that you can always rely on Monarch for the turning equipment to assure you peak production at minimum cost to keep you ahead of the parade . . . . . *The Monarch Machine Tool Company, Sidney, Ohio.*

TOOLMAKER'S LATHES • ENGINE LATHES • TRACER-CONTROLLED PRODUCTION LATHES
ROLL TURNING LATHES • AIR-GAGE TRACER, MOTOR-TRACE & KELLER CONTROLS

Monarch

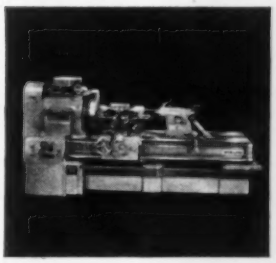
ACCURACY • ECONOMY • LONG LIFE

TURNING MACHINES

FOR A GOOD TURN FASTER . . . TURN TO MONARCH

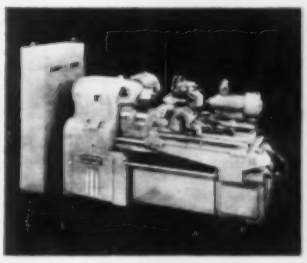
THE SHAPEMASTER ENGRAVER

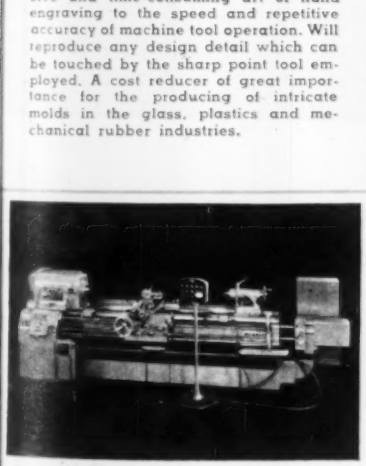
Here is a lathe that reduces the expensive and time-consuming art of hand engraving to the speed and repetitive accuracy of machine tool operation. Will reproduce any design detail which can be touched by the sharp point tool employed. A cost reducer of great importance for the producing of intricate molds in the glass, plastics and mechanical rubber industries.



THE MONA-MATIC

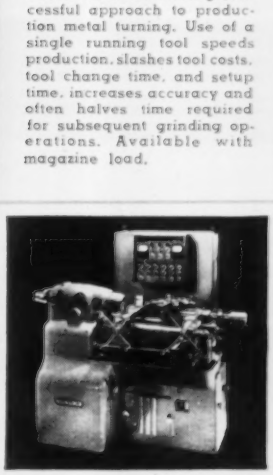
A new and outstanding successful approach to production metal turning. Use of a single running tool speeds production, slashes tool costs, tool change time, and setup time, increases accuracy and often halves time required for subsequent grinding operations. Available with magazine load.





MOTOR-TRACE CONTROLS

The ideal tracer control for most step shaft work. This, with the "Air-Gage Tracer" and Keller Controls, provides Monarch users with a choice of either one of three distinct types of tracer control.



THE SPEEDI-MATIC

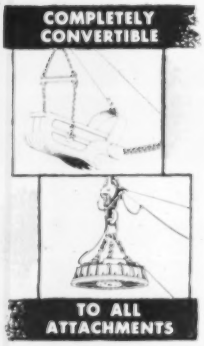
A fast, precision, electronically controlled hand screw machine. Short setup time makes it practical for quantities of 25 or less—up to 3000 or more. As many as nine different speeds and six different feeds may be preselected to become operative at proper time in cycle. Suitable for first or second operation work. Speed range—40 to 4000 R.P.M.

New
UNIT 1520
Self-Propelled
RUBBER-TIRED
CRANE

20
TON
CAPACITY

Built by modern precision methods, the UNIT 1520 leads the field in quality, and dependable performance. Designed for both "on and off" highway operation. So compact, it works efficiently even in small, cramped quarters, "in or out" of the yard.

- Rugged Construction
- Perfectly Balanced
- Hook Roller Construction
- Operated by ONE Man
- Powered by ONE Engine
- Hydraulic Steering
- Air Brakes and 4 Speed Air-Actuated Transmission
- Heavy Duty, yet operated with remarkable SPEED . . . SAFETY . . . ECONOMY!



UNIT 1520 can be equipped with retractable high A-Frame to permit capacity loads on extended boom at long radius.

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A 5413-2/5CA-R

ing arcs. It is supported by a long mandrel which extends back into the cylinder, where it is held by arms extending through the seam opening from the frame above.

The direct current arc uses 450 amperes with 32-34 volts, with the wire as the negative pole. The alternating current arc uses 600 amperes with 38-40 volts. Four 1000-kva transformers furnish power for generator sets and all other alternating current equipment. Motor generator sets furnish the direct current needed by the welding operation, cranes and variable speed drives.

Flux Fed by Gravity—A 5/32-inch welding wire in coils is used throughout the automatic seam welding. Wire is fed continuously to the arcs by air-driven motors, automatically controlled by the voltage drop across the arcs. Flux, developed for this purpose, is fed by gravity onto the seam just ahead of the leading arc. Part of the flux is fused over the weld and protects and insulates the bead. Unfused flux is picked up by vacuum on the exit side of the welding cage and returned to the feed hopper.

As the welded cylinder is delivered out of the cage, the operator manually removes the spent, fused flux and examines the weld. Completed sections are separated by cutting through the tack welds with a torch. Sections from the three machines converge into one line again by rolling sideways onto skids set about 8 inches above the floor.

Starting tabs are welded to both pipe ends at points where the inside weld is to be started and stopped. This is done manually by using a submerged-arc process.

The outside diameter welded pipe is rolled and conveyed to the next operation, which is welding of the inside seam. There are four machines used for this purpose. The welding heads, flux hoppers and vacuum lines are supported by long stationary cantilever beams. Pipe, with the seam to be welded positioned at the bottom, is locked on a carriage. The carriage, with the positioned pipe, is moved onto the cantilever beam at a constant rate of approximately 52 inches per minute and the weld is made in the same manner as the outside weld. This weld is started on the front tab and stopped on the back weld bead.

Position of the inside bead, which is deposited directly on the inside seam, is controlled by watching the heat penetration through the outside bead by means of a mirror held beneath the pipe. Screws which move

supporting platform on each end of the carriage are used to maintain alignment on-seam welding. Vacuum lines are used after the welding operation to pick up and return unfused flux to feed hoppers.

When the inside weld is completed, the carriage is reversed and the pipe is rolled off onto a chain conveyor which delivers it from all four welders to the fused flux removal station.

Inspection Procedure—Handling of the pipe loosens fused flux on the inside, which is removed by a vacuum line supported on another cantilever beam. The pipe is conveyed onto the cantilever beam and after it has traveled its full length, the conveyor automatically reverses. It is rolled onto another conveyor which delivers the welded pipe to the mill inspection and repair floor. All substandard conditions of both inside and outside finished welds are marked by inspectors for repair. General trends away from standard are reported to the welding station responsible for the departure and corrections promptly made.

At this point, the inside weld bead is chipped flush with the inside surface on each end of the pipe for a distance of 3 to 4 inches. Purpose of this operation is to accommodate lineup clamps for circumferential welding in the field.

The pipe then is rolled and conveyed from the conditioning floor to a mechanical end expander. Three inches of each end of a section are expanded mechanically until end diameters are up to size. This is done by inserting an expanding head in each end of the pipe. Each head has 12 shoes set around a large hydraulic powered tapered plug. The length of travel of the plug, which expands the shoes, is regulated to give the final outside diameter needed.

The pipe is next conveyed to either of two sets of skids leading to two hydraulic expanders, where each inside end of the pipe is fitted with 2-inch rubber gasket rings.

Expanded by Hydraulic Force — The hydraulic expander consists of two fixed heads set 32 feet apart but held together with four heavy tie beams. One of the fixed heads is fitted with a movable section supported by four wheels traveling on a track. This movable head is advanced forward by eight plunger-type cylinders equally spaced around the head, and pulled back by one piston-type cylinder located in the center. A ram is fitted on the movable head and has a diameter equal to the finished pipe. Connections for the intake, low, medium and high pressure water, as well as an outlet

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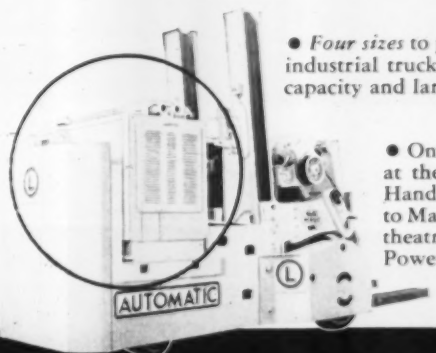

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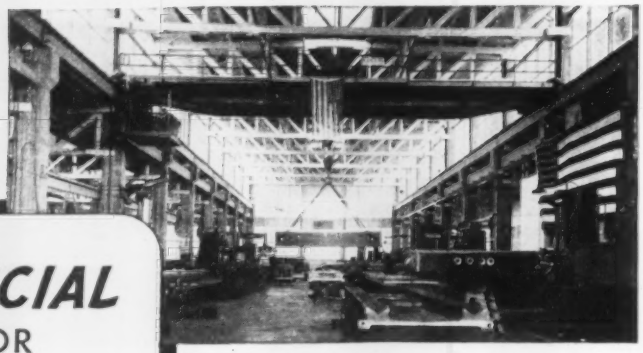

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for air, are located in the other head, which is fixed.

All hydraulic water valves and other expander operations are controlled from a central station and each is operated by a separate oil hydraulic system. In between the fixed head on one end and the movable head on the other, are three sections of split, cylindrical dies which are hinged at the bottom. Hydraulic cylinders are used to raise and lower the split dies. Dies, when closed, form a cylinder and can be locked together with a taper grooved beam. This locking beam is moved up and down by means of hydraulic cylinders.

The pipe is positioned lengthwise by rolling it onto a movable table. This table is also equipped with powered rolls to position the welded seam so that it will be at the top when the pipe is rolled into the expander dies.

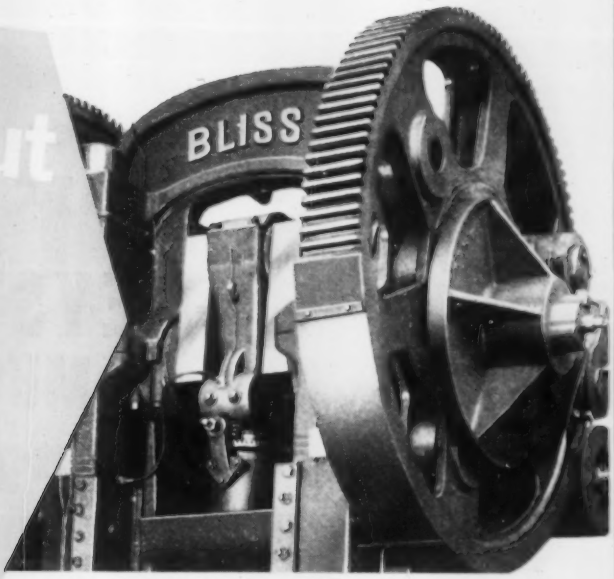
After it has been correctly positioned, pipe is rolled over the open half of the dies, all three sections raised, closed and the lock bar lowered. The ram on the movable table head is inserted in the end of the dies and locks the pipe against the opposite fixed head.

Water from low pressure pumps is used to fill the pipe and the contained air exhausted during this filling. Medium pressure and finally high pressure water is connected to the filled pipe. The low pressure water is furnished by centrifugal pumps at 50 psi; medium pressure water by three-stage centrifugal pumps at 500 psi; and high pressure water from two air accumulators and four three - cylinder reciprocating pumps operating at 2500 psi maximum pressure. After all air has been exhausted by completely filling the pipe with water, pressure is increased until the pipe wall yields and is set against the containing dies.

Expansion Pressure Is Higher—Pressure used for expanding the pipe is approximately 500 psi higher than the test pressure required. These test pressures are usually so set that the pipe will be stressed from 85 to 90 per cent of the minimum transverse yield strength specified. These pressures vary with diameters and wall thicknesses of pipe that is being produced.

Plate width is so planed that when formed into the cylinders and welded, approximately 1.5 per cent expansion is required to bring the outside diameter up to ordered size. Normal specification requires the finished pipe to have minimum transverse physicals as follows: Yield strength 52,000

Increase output 60-70% with Quick-Return Drive...



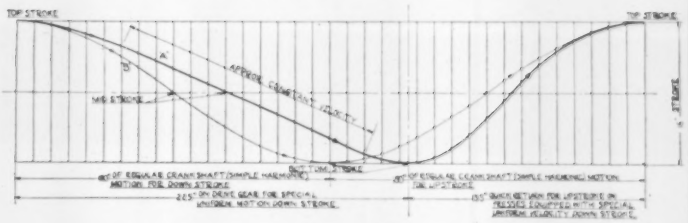
on BLISS Long Stroke Presses

For cartridge case press lines, the extremely long strokes of redraw presses either slow production or give excessive draw speeds. With the quick return drive built into Bliss long-stroke crank presses, output of entire lines can be increased 60% to 70% with a reduced and more efficient draw speed.

The Bliss "drag-link" mechanism gives uniform velocity on the downstroke and quick return on the upstroke. By providing better drawing conditions it makes possible the production of more perfect stampings.

In the field of shell drawing, for example, shells with flanges, or shells that are tapered or stepped to different diameters at different portions, may be drawn or redrawn with absolute uniformity of every dimension—a result of the uniform down-motion of the stroke.

For drawing or forming steel, copper and brass...for light and powdered metals, Bliss has the presses—hydraulic or mechanical—which will increase your production. Write Bliss engineers for further information.


TOP STROKE
TOP STROKE
A
B
APPROX. CONSTANT VELOCITY
MID STROKE
STROKE
90° OF REGULAR CRANKSHAFT (SIMPLE HARMONIC) MOTION FOR DOWN STROKE
90° OF REGULAR CRANKSHAFT (SIMPLE HARMONIC) MOTION ON UPSTROKE
225° ON DRIVE GEAR FOR SPECIAL UNIFORM MOT ON DOWN STROKE
135° QUICK RETURN FOR UPSTROKE IN PRESS EQUIPPED WITH SPECIAL UNIFORM VELOCITY DOWN STROKE

Displacement curves show difference in motions and velocities of two slides actuated by the two different crank mechanisms while operating at same s.p.m. and over the same length of stroke. Curve A is the motion imparted by the new constant-velocity mechanism. For the greater part of the downstroke, above as well as below midstroke, speed of the slide is very nearly constant, and the velocity at midstroke is less than 60% of the normal crank velocity for the same s.p.m. Quick return on the upstroke brings the slide to top position at the end of the same time-interval as that in which the regular crank mechanism makes one complete cycle with simple harmonic motion.

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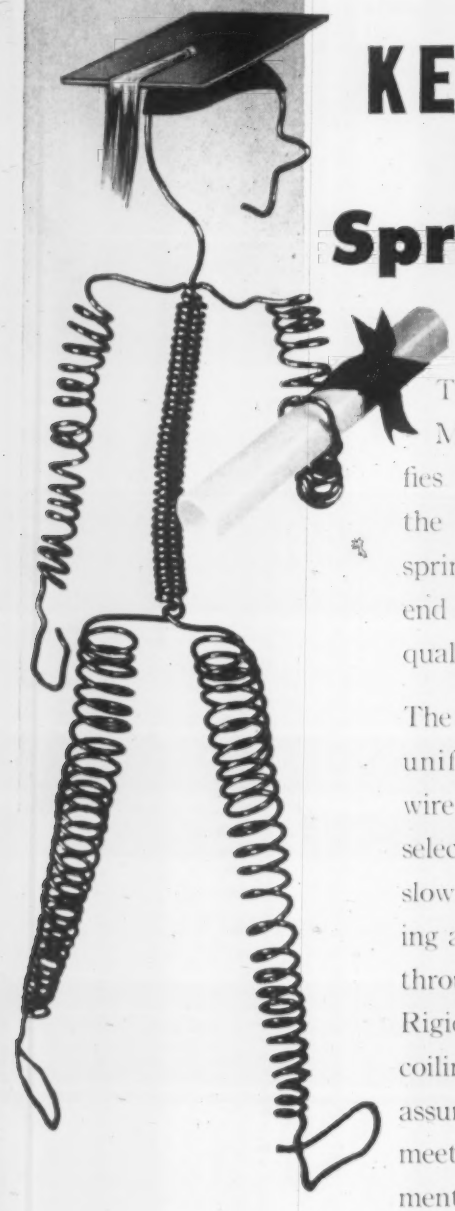
KEYSTONE
MUSIC
Spring Wire



The uniformity of Keystone Music Spring Wire simplifies production problems in the manufacture of intricate springs and parts . . . assures end products of the highest quality.

The structural soundness and uniformity of this quality wire is attained by careful selection of raw materials, slow and meticulous processing and constant examination throughout its manufacture. Rigid final inspections include coiling, torsion and bend tests assuring the right quality to meet your exacting requirements.

If your products require any type of "special" steel wire, please consult us.

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psi, tensile strength 65,000 and elongation in 2 inches 22 per cent.

After expanding the pipe, water pressure is lowered to the specified test pressure and the lock bar is raised. The two end-die sections are lowered, leaving the pipe held between the two heads and the center sections of the split dies. The center dies are lowered after decreasing the pressure to approximately 500 psi. While holding this pressure, the welded seam is inspected for sweats and leaks. Entire pressure cycle on each pipe is recorded on a circular chart.

After the pipe has been expanded and tested, the movable head is pulled back and the pipe is rolled out of the expander onto skid supports, where the contained water drains out into receiving pits below. Any solids are allowed to settle to the bottom of these pits before the water is returned to the system.

Pipe Is Faced and Beveled — The pipe rolls by gravity from each expander to one of two machining stations, where both its ends are faced and beveled. At each station are located two machines facing each other between which the pipe is rolled. The machines are equipped with expanding arbors which are inserted into the pipe and, when expanded, hold it in line and prevent any out-of-square machining or rotation.

Each machine is equipped with three beveling tools and one facing tool. These tools are mounted on a rotation head whose drive shaft is a cylinder fitted in close tolerance bearings and around the arbors. Feed on the tools is controlled by a cylinder fed from an oil gear pump. The bevels are cut at 30 degrees with a plus tolerance of 5 degrees and a minus tolerance of 0; width of flat at the end of pipe is 1/16-inch plus or minus 1/32-inch.

Machined pipe is rolled and conveyed onto skids where it is given a final inside and outside inspection. After acceptance it receives the inspector's stamp, is measured for length and weighed.

Located in the same building where welding and finishing operations are performed, is a 113-foot span single hoist, 10-ton overhead electric crane that supplements the chain conveyors and gravity skids in handling the pipe.

After being weighed, pipe is conveyed to outside storage skids on which it rolls by gravity approximately 500 feet to loading stations adjacent to a railroad siding and truck loading area. All pipe is shipped in single lengths of approximately 30 feet.

Liquid Helium Held 100 Days

A "super thermos bottle" that can hold the world's coldest liquid 15 times longer that the best container previously available was developed at the Westinghouse Research Laboratories, Pittsburgh. Dr. Wexler, head of company's low-temperature studies, revealed perfection of a thermos bottle that will hold four gallons of liquid helium—with a temperature of only eight degrees above absolute zero—for 100 days. The best container previously known was able to retain a similar quantity of liquid for about a week. Liquid helium is widely used by scientists in studies of materials at super-cold temperatures and in some phases of atomic energy development.

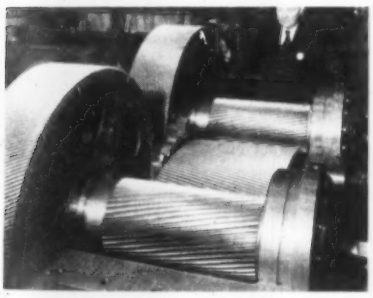
Dr. Wexler announced the new device at a symposium on low temperature physics held at the U. S. Bureau of Standards in Washington. He collaborated in its design and construction with Howard S. Jacket of the Hofman Laboratories Inc., Newark, N. J.

By careful design, the Westinghouse scientist told the group, larger containers could be built which would keep the cold in for a year or longer.

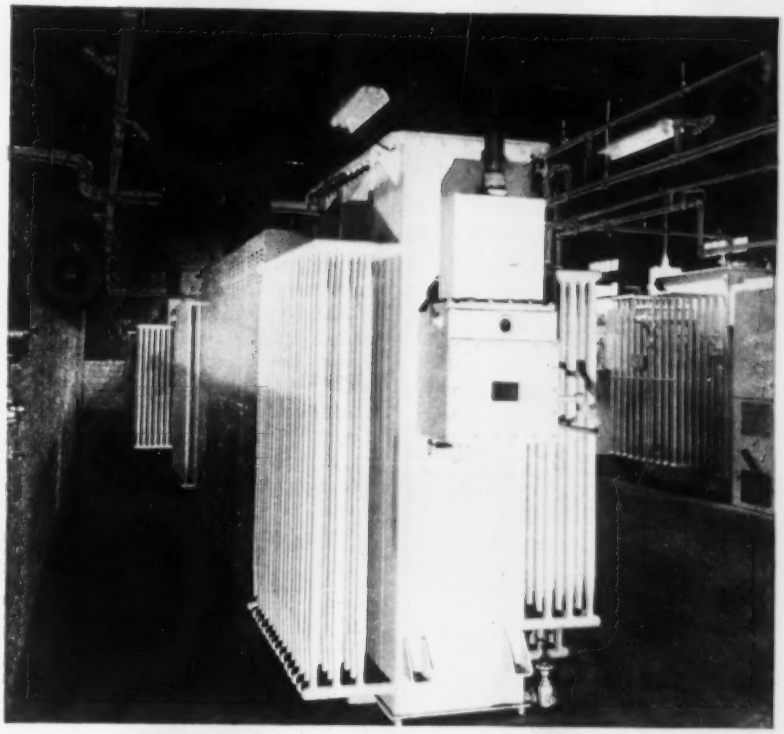
The new device—a copper sphere immersed in liquid nitrogen—answers the need for a long-time storage container for liquid helium, Dr. Wexler said, and may help bring about a radical change in present shipping methods for such refrigerants.

"Because liquid helium evaporates very rapidly, 840 times faster than

More Speed for Ore Carriers



PROPULSION gear for the S.S. Homer D. Williams, Great Lakes ore carrier, is shown with the upper half of its gear casing removed while on test at the Lynn River Works of General Electric Co. The propulsion unit designed to add speed and modernization to low powered ore carriers is rated at 3000 shaft horsepower at 110 rpm. Steam conditions at the turbine will be 440 psig, 740°F total temperature with a back pressure at the turbine exhaust flange of 1½ inches of mercury absolute



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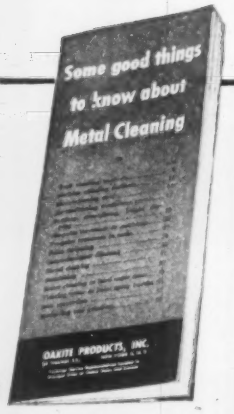

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water does at the boiling point," he explained, "it has been necessary to ship it as a gas and then liquefy it at the point of use. This has required the use of heavy steel containers and very high pressures to keep the volume of the gas down to a minimum. With the new container it may be possible to ship liquid helium in thin-walled containers at ordinary atmospheric pressure, thus effecting a savings in both space and materials." The bottle should also facilitate research in the field of low temperatures, the scientist added, by providing a lasting supply of the super-cold liquid. Previously, it had to be liquefied on the spot and lasted not much longer than the duration of the experiment.

Slotted Insert Output Boosted

Slotting machine with eight spring-loaded insert holders equally spaced on indexing table with three rotary saws is used by Rosan Inc., South Gate, Calif. Rotary saws, independently mounted on the base of the slotting machine, are co-ordinated to slot with the indexing motion of the table. Formerly requiring 25 seconds to produce one unit, this new machine allows production of slotted inserts at the rate of one every 5 seconds. The number of manual operations is cut in half by the device and three inserts are slotted in the time originally required for one slotting operation.

Saws and indexing table are driven pneumatically instead of electrically. Speed of the slotter is variable and second operator can be employed to load and unload it yielding greater output. Previously a single-saw machine allowed one insert at a time to be clamped, indexed and slotted by drawing the insert over a stationary blade. This action resulted in excessive blade breakage and considerable expense in setup time.

Flame Does Straightening Job

Flame-straightening is saving a West Coast fabricator approximately $2000 a year since the method was adopted to straighten about a hundred heat-warped steel boxes each year. The boxes were formerly straightened cold, using a 50-ton jack. Considerable cutting and re-welding were required, and 60 to 100 man-hours were needed for each box. Now the job is done in about 30 hours with flame-straightening.

Two operators, using oxyacetylene heating blowpipes, heat a triangular patch in the sides of the boxes while force is applied with the 50-ton jack. By this method the sides, 16 feet long, 4 feet high and topped with 12

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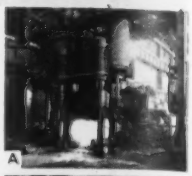
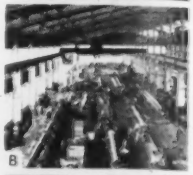
A—2000 Ton Forging Press, Electrically Operated.



B—Modern Milling Machinery and Equipment.

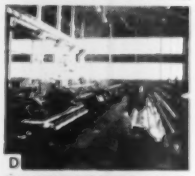
C—View of one Bay in our No. 2 Machine Shop.



D—Typical Heavy Duty Boring Facilities.

E—Precision Boring Hollow Shafting.

F—Heat Treating Two 60,000 lb. Ship Forgings.



G—Testing and Assembly of Forged Hi-Pressure Valves.

With these and many other modern facilities, TITUSVILLE produces heavy FORGINGS, rough turned or finished to meet A.S.T.M., A. S. M. E. or A.P.I. Codes. Write for complete data.

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Republic Conveyor Belts eliminate hours of tough, unnecessary labor on the job. Republic Products, like the lumber-hauling Record Maker Conveyor Belt shown below, are made of quality materials especially chosen to give extra performance at minimum cost. Your Republic Distributor is an expert analyst who can quickly tell which of the hundreds of Republic Industrial Rubber Products is best suited to your line of work. Contact him today, or write us direct. Remember, for a half-century the Republic name has stood for performance through quality. For best results "Try Republic First!"

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INDUSTRIAL RUBBER PRODUCTS BY

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Lee Rubber & Tire Corporation

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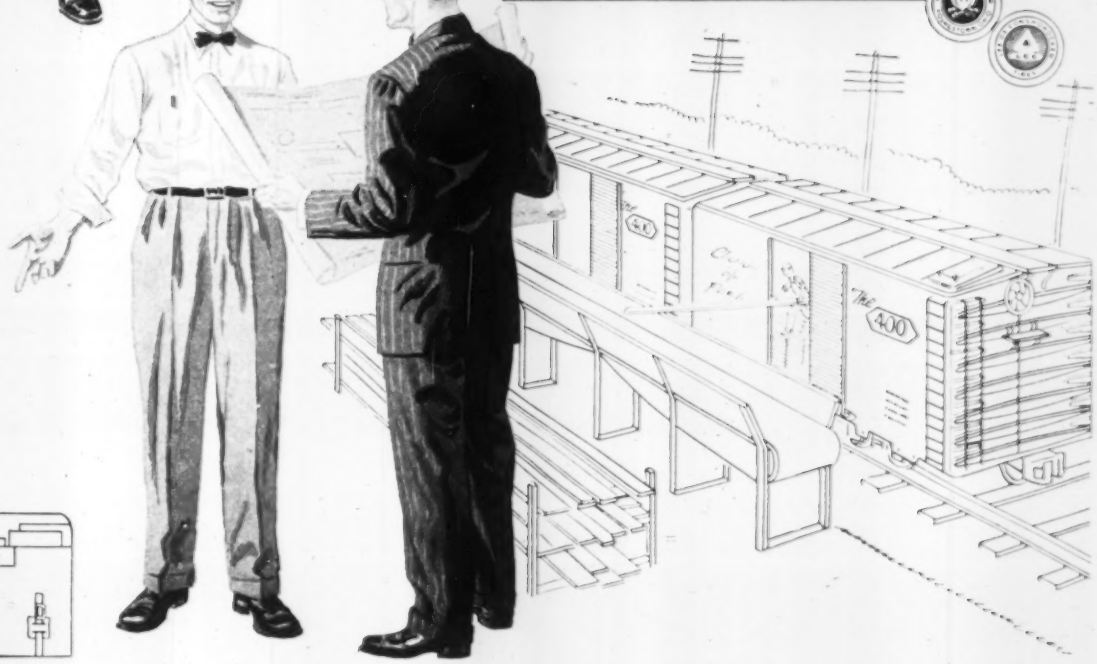
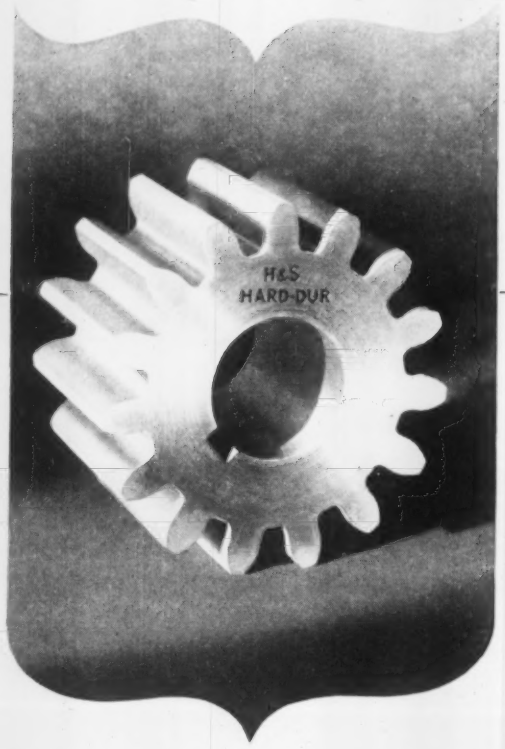


when the job is tough . . .



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• "HARD-DUR" Gears not only preserve tooth form because the material is highly wear resistant and the gears are scientifically heat treated to obtain maximum physical properties...but they have involute teeth that are produced to high standards of accuracy by very careful workmanship. In fact "HARD-DUR" Gears are so much stronger, harder and more wear-resistant, that they are guaranteed to have at least four or five times the life of similar untreated gears...and at only 50% extra in cost.

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inch extra heavy channel, are pulled back into shape. The flame-straightening method also eliminates an undesirable twist caused by exposure to heat. Cold straightening failed to remove this twist.

GE Starts Motor Program

An educational program designed to aid in the rapid training of industrial personnel in the selection and application of modern electric motor drives is announced by the General Electric Co., Schenectady, N. Y. Fifteenth in the company's "More Power to America" series, the motor program is devoted to the task of quickly indoctrinating qualified personnel in the nation's factories as an aid to industrial mobilization.

Industrial motor program consists of a motor selection and application course made up of nine 35-mm black-and-white slidefilms, student review booklets on each lesson, and an instructor's manual. Each film has a running time from 15 to 30 minutes and is accompanied by a 16-inch sound recording of the script. Student booklets are intended to be passed out for home review to those taking the course. They contain reprints of slidefilm scripts with key pictures, quick-review outlines, and sets of test questions.

Prepared to enable any competent engineer to teach the course, the 96-page instructor's manual includes complete instructions on how to plan and set up each lesson, projection information, and complete scripts and pictures for all nine slidefilms. It also contains questions and answers to accompany review frames attached to each film, references sources, and answers to questions contained in the student review booklets.

Program will be distributed this month to GE district offices throughout the country for showings to interested groups. These will include users and potential users of electric motors, application engineers, power sales engineers, machinery manufacturers, designers, contractors, consulting engineers, and students.

Although some people in any audience will be familiar with certain aspects of motor operation and selection, the first three slidefilms in the course (Fundamentals of Motors, Types of Motors, and Fundamentals of Motor Selection) establish a "common language" at the start. The following six films, presented on a more technical level, show how to select and apply polyphase induction motors, single-phase integral-horsepower motors, direct current motors

synchronous motors, adjustable-speed drives and gear motors. They are designed to be shown after the first three slidefilms, or at least after the third slidefilm which sets up basic principles for selecting any motor.

Fast Carbide Turning Studied

Measurement of the components of tool loads on a lathe was among the problems solved by engineers of Jones & Lamson Machine Co. Springfield, Vt., in preparation for a broad research program on carbide high-velocity turning. The methods used and results of this work were reported by Leif Fersing, experimental engineer, at the annual meeting of American Society of Mechanical Engineers.

Solution of this problem was based on utilization of SR-4 resistance wire strain gages which were bonded to a special tool holder and small cantilever beam in such a way as to enable determination of radial, tangential and feed forces. SR-4 strain gages made by Baldwin-Lima-Hamil-

Raw Materials Handled Faster

SULPHUR and bauxite are handled from steamship to distantly located storage areas at an accelerated rate by American Cyanamid Co.'s Warners plant in Linden, N. J., since the company installed new equipment including an unloading tower and a new type of boom stacker with auxiliary conveying and distributing equipment made by Derrick & Hoist Co. Inc., Long Island City, N. Y., which will handle the two materials at the rate of 600 gross tons per hour. An example of added efficiency of this equipment is the recent unloading of a 10,600-ton shipload of sulphur in less than four days where previously used equipment would have taken nine days

"Sitting Pretty"

Everyday's a holiday from grinding problems since he put Simonds Abrasive Company wheels to work. More production . . . fewer wheel dressings . . . and DO's out ahead of schedule. Why? Because all Simonds wheels are accurately specified . . . rigidly tested . . . and scientifically controlled in manufacture. Complete line includes grinding wheels, mounted wheels and points, segments and abrasive grain . . . all backed by Simonds' more than 50 years experience as a major manufacturer of grinding wheels. Write for free Data Book.

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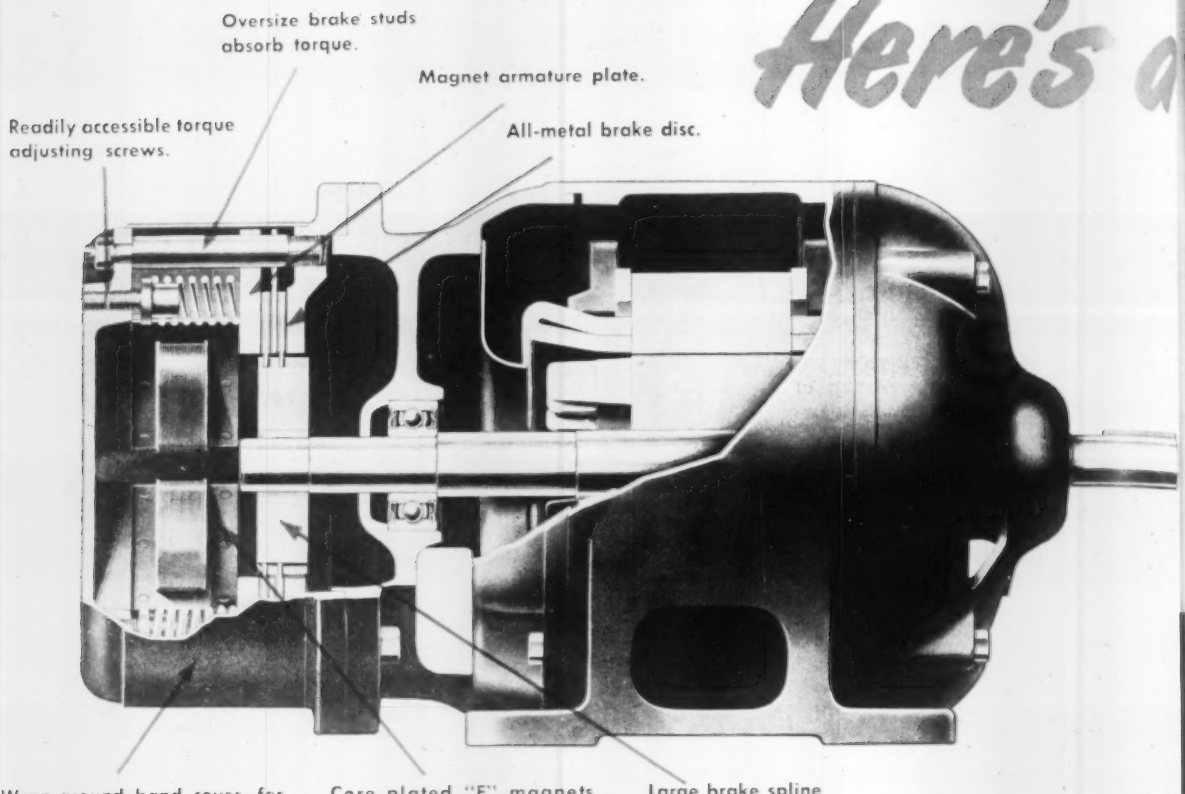
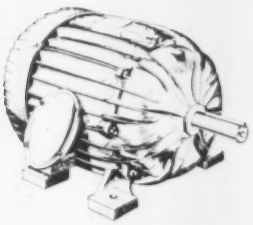
Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N. Y., Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co., Ltd., Arvida, Que.

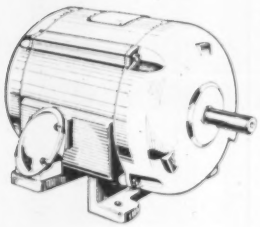
Here's a


Oversize brake studs absorb torque.
Magnet armature plate.
Readily accessible torque adjusting screws.
All-metal brake disc.
Wrap-around band cover, for totally-enclosed protection and easy removal.
Core plated "E" magnets. Readily accessible. Location keeps heat away from motor.
Large brake spline with many teeth.

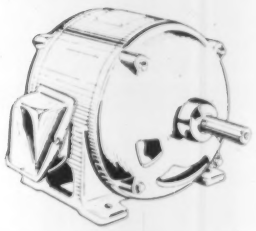
Other ELLIOTT C-W motors for special and general use . . .



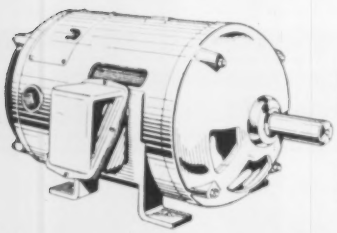
TYPE CFC
Squirrel cage, "Sealed Power," Totally-Enclosed, Fan-cooled



TYPE BE
Squirrel cage, Totally-Enclosed, Non-Ventilated



TYPE BA
Squirrel cage, open-drip-proof (protected)



TYPE BW
Wound rotor, Open-drip-proof (protected)

Other Elliott products include: **Turbine-Generators • Deaerating Heaters • Generators • Turbochargers • Strainers • Centrifugal Blowers • Condensers • Mechanical Drive Turbines • Steam Jet Ejectors and Tube Cleaners.**

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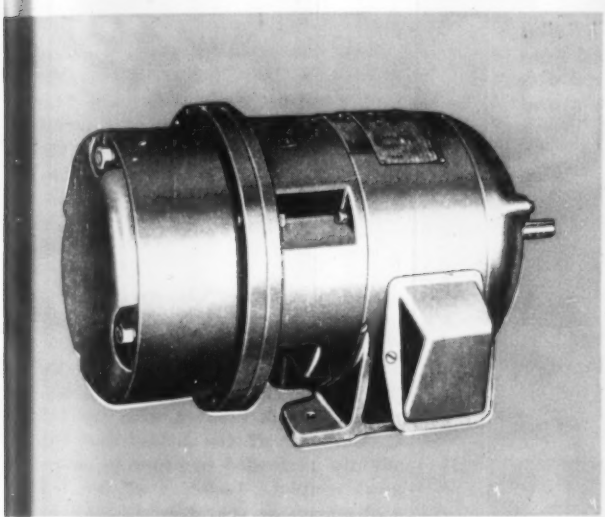
General Offices & Main Plant—Jeannette,

a brake that can take it!

The Elliott CROCKER-WHEELER BRAKE MOTOR

QUICK STOPS AND STARTS are taken in every day stride by this rugged brake motor. Its all-metal *bonded* brake linings dissipate heat faster, wear longer and are immune to dampness, cold and other "brake killers." In performance, the powerful magnetic braking action is instantaneous—and sure.

Moreover, the Elliott C-W brake is tops in compactness and adaptability. It can be mounted on double shaft extension NEMA standard D flange or C face motors without the need of mounting brackets or adapters. Teamed with an efficient Elliott C-W motor (protected or totally-enclosed types), it's a combination that's hard to match.



The Elliott C-W Brake-Motor. Note the simple, wrap-around cover on the brake to give totally-enclosed protection.

SEND FOR THIS BULLETIN

It gives you all the details of construction and applications. Ask for BRAKE MOTOR BULLETIN SL-610-1 and address your request to Elliott Co., Dept. P, Jeannette, Pa.

ELLIOTT C-W motors range from 1 to 200 hp. Large ELLIOTT motors and generators are built by the RIDGWAY DIVISION in Ridgway, Pa.

CW-23

CROCKER-WHEELER DIVISION
AMPERE, N. J.
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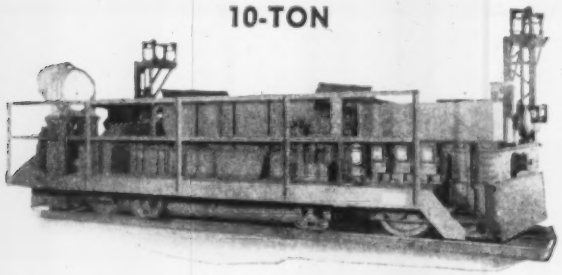
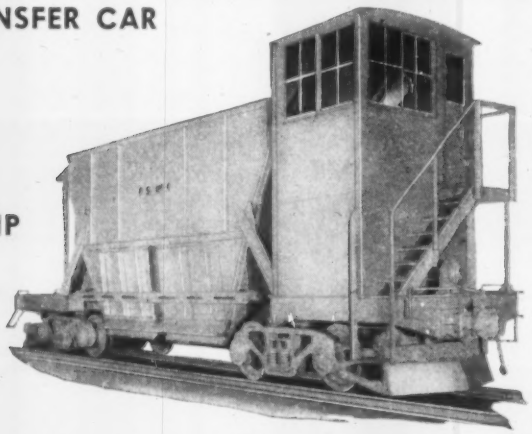


BOTTOM DUMP SCALE CAR

Single Hopper Type, equipped with Atlas All-Steel Roller Suspension Scale provided with Atlas Indicating and Type Printing Recorder. Car has air brakes, air operated discharge gates. Bus-type control with usual interlocks and standard safety equipment.

ORE TRANSFER CAR

SIDE DUMP



Two compartment hopper with separate discharge gates, independently operated from front and rear vision cab. Car is equipped with air brakes, self-aligning bearings and standard safety equipment.

ATLAS BUILDS:—Scale Charging Cars and Ore Transfers; Indicating and Recording Dials for weighing scales; Electric and Storage Battery Locomotives; Coal Charging Cars; Door Extractors; Coke Quenching Cars; Turntables.

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ton Corp., Philadelphia, are essentially tiny grids of hair wire which, when bonded to a strained member, are strained with the member, thus changing their electrical resistance by measurable amounts.

Development of a special tool holder for measuring these components required designing for rigidity without loss of sensitivity and accuracy. This was provided by means of a massive tool post having a round hole in which the toolholder was clamped. A slot in the top of the tool post provided for clamping the toolholder by means of three cap screws.

Tool holder was machined from a solid piece of steel, the flanged length being bored and turned to a tubular section. A square hole was provided in the solid end to receive 1 x 1-inch tools. It was located so that the cutting edge of the tool could be kept on the axis of the holder. This minimized errors from torque interference with components of tool loads. An end plate was pressed into the rear end of the holder and fitted with a steel ball in its center.

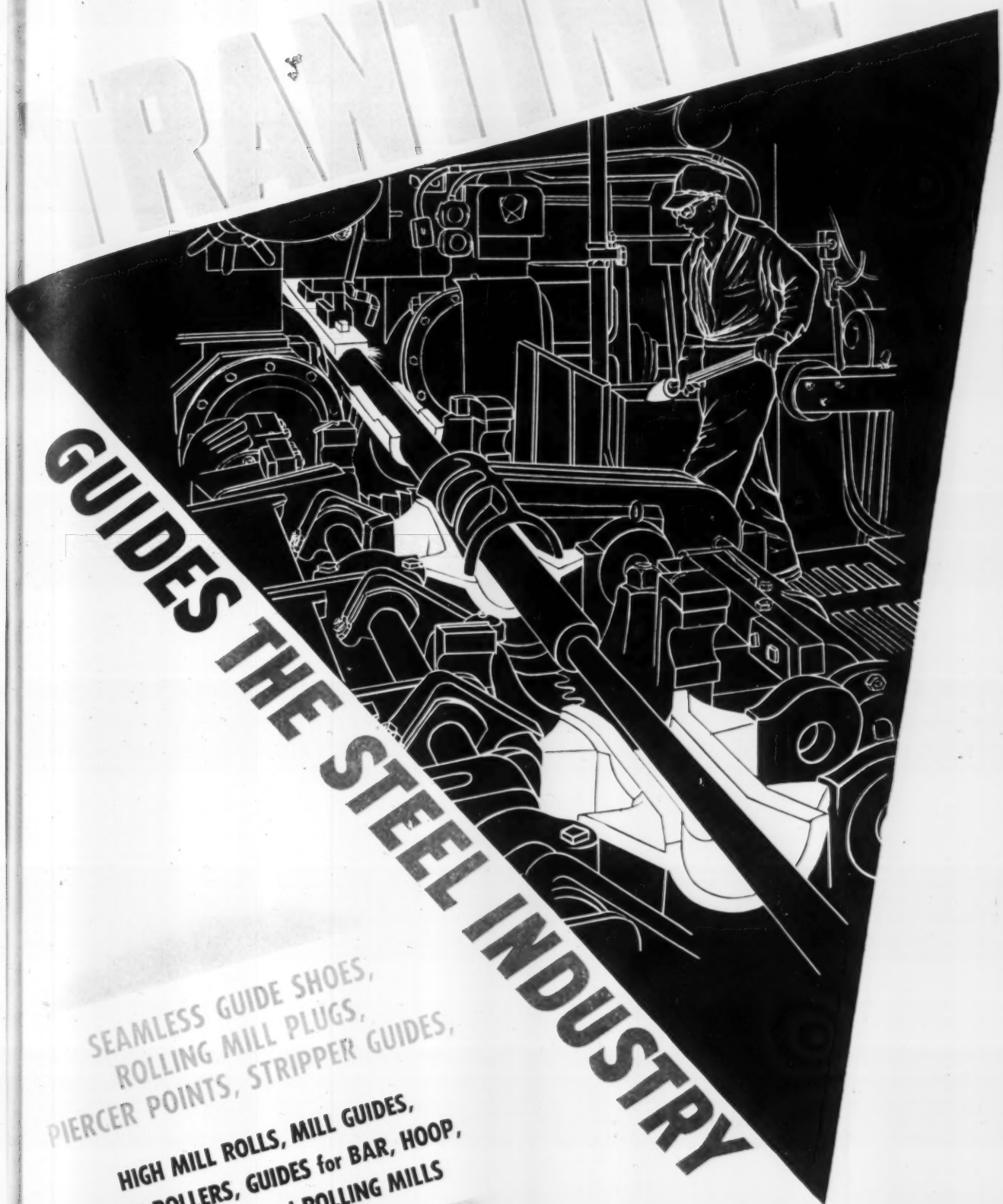
Two sets of strain gages were cemented to the holder behind the flange nearest the cutting edge. This flange, outside of the tool post, served as a guard for four of the gages. The tangential load on the tool was measured by two gages on top and bottom of the holder, and the feed load by two gages placed on the sides of the holder.

Radial or shank load was indicated by a set of gages on a cantilever supported at the rear end of the tool post at right angles with the axis of the toolholder. The upper end of the cantilever was in contact with the ball at the rear of the holder and was slightly preloaded in order to assure good contact. Location of the ball was chosen so that bending loads on the toolholder would have minimum effect on radial tool loads. The three sets of strain gages on the toolholder were connected to universal analyzers and direct-inking oscillographs, which made simultaneous records.

Whiz Polish Back on Market

Whiz brown metal polish, off the market for several years because a shortage of raw materials curtailed its sale except to government agencies, has just been reintroduced as a standard product in R. M. Hollingshead Corp.'s line of industrial maintenance chemicals. The name describes both the product and its use. It has been specially developed for cleaning brown metals: Copper, bronze, brass, etc. In use, the product dries brown and leaves no light-

TRANTINYL



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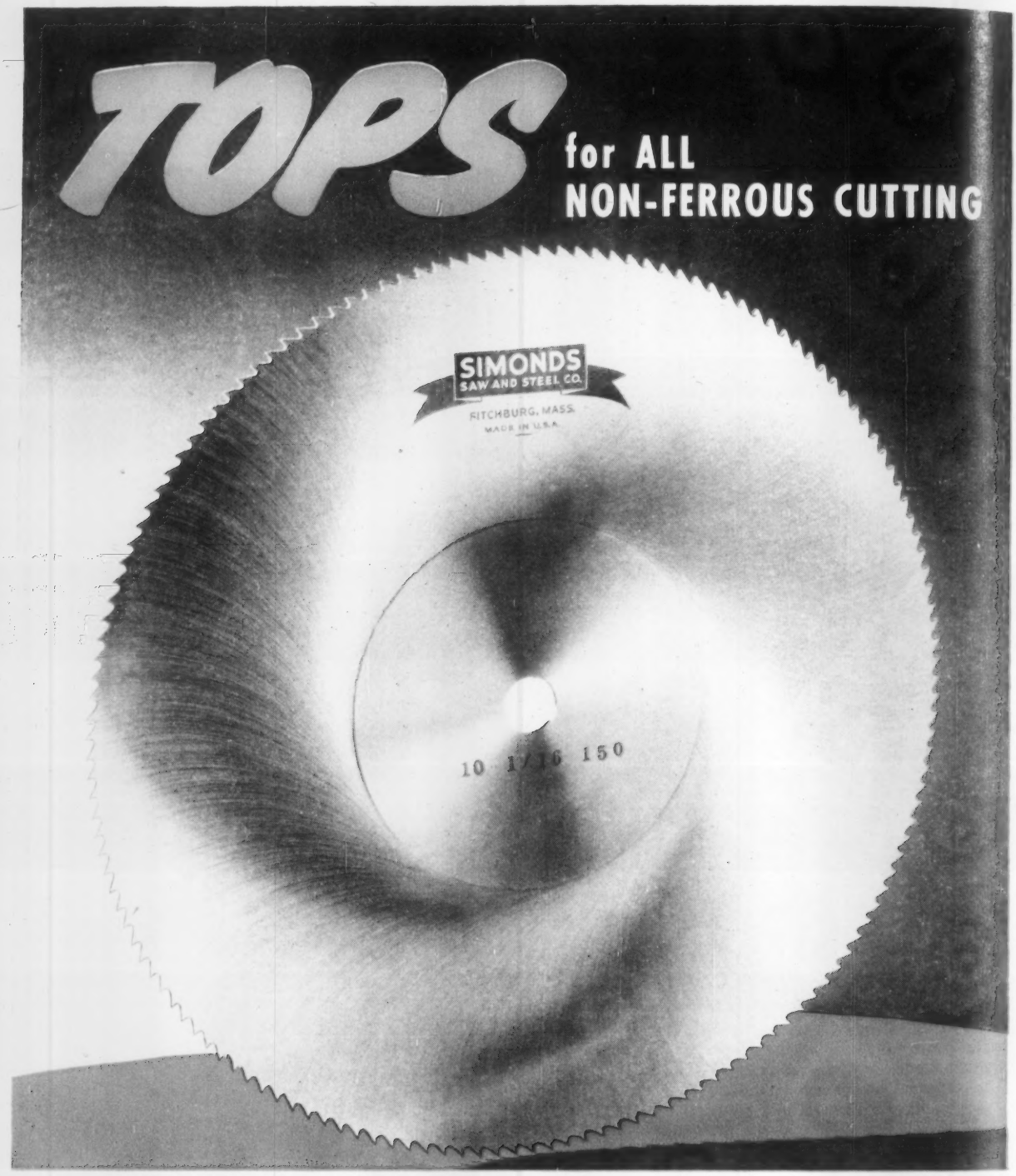
PIERCER POINTS, STRIPPER GUIDES,

HIGH MILL ROLLS, MILL GUIDES,
GUIDE ROLLERS, GUIDES for BAR, HOOP,
STRIP, SHAPE and ROLLING MILLS

Youngstown Alloy Casting Corp.
Youngstown, Ohio

TOPS for ALL NON-FERROUS CUTTING



On all non-ferrous metals, here's the toughest, most "stand-up-and-take-it" saw made . . . with a proven production record on everything from light-wall sections to solids.

SIMONDS heat-treats these saws for individual applications, according to speed, type of material, and machine. And SIMONDS design assures top cutting efficiency . . . with correct tooth-shape that eliminates clogging of gullets . . . with high, smooth finish that resists adherence of chips to plate . . . and with proper clearance for freer, cooler, straighter cutting.

Standard sizes are immediately available from stock . . . so see your Simonds Distributor *today*.

SIMONDS
SAW AND STEEL CO.
FITCHBURG, MASS.

Branch Offices in Boston, Chicago, San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.

dust in crevices to detract the beauty of the brown metals are cleaned.

Polish is said to remove 60 per cent of the tarnish without rubbing. It dissolves film so that tarnish can be easily wiped off with a soft cloth, making hard rubbing unnecessary. In addition, it leaves an invisible, protective film on the surface that retards further tarnishing action. One of the important advantages of the polish, according to the manufacturer, is the fact that it is non-inflammable, eliminating any danger of fire either in storage or in use.

Bright Finishing Still Possible

Manufacturers of metal products can still produce durable bright finishes without copper or nickel using processes developed by United Chromium, Inc., New York. One finish which has already been widely adopted is produced with zinc plate, Unichrome clear dip, and Unichrome baking synthetic B-115. This finish has eye-appeal similar to that of chromium plate; it possesses protection against rusting of zinc.

To produce this finish, the part is zinc plated to a thickness of 0.0002 to 0.0005-inch, depending on the application. Then it is treated in clear dip. This part of the process is flexible, allowing for manual semiautomatic or full automatic operation. After the clear dipping operation, the parts are dried and given a dip or spray coat of clear baking synthetic. Resulting finish looks very much like chromium. Its durability of the finish is proved in years of use on refrigerator shelves, ice skates and bicycle parts. At present, the finish is being used by manufacturers of automotive, hardward and electrical appliances.

Another finish receiving consideration is chromium plated directly on the basis metal and the chromium coated with a durable, clear baking synthetic. On steel, this finish is simple to produce. On die castings, however, chromium is deposited as a relatively gray plate which requires buffing to bring up the luster. Whether plating steel or zinc die castings, it is advisable to deposit several times the amount of chromium normally used for decorative work.

Prizes for Welding Papers

Entries in the prize paper contest conducted by the Resistance Welder Manufacturers Association must arrive not later than July 31 at the association's headquarters at 1900 Arch St., Philadelphia. Those engaged in industry or research compete for a first prize of $750, a second

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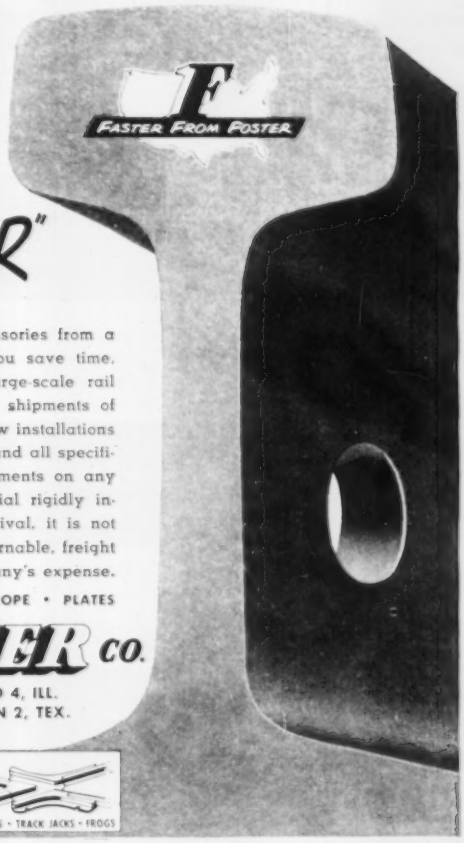

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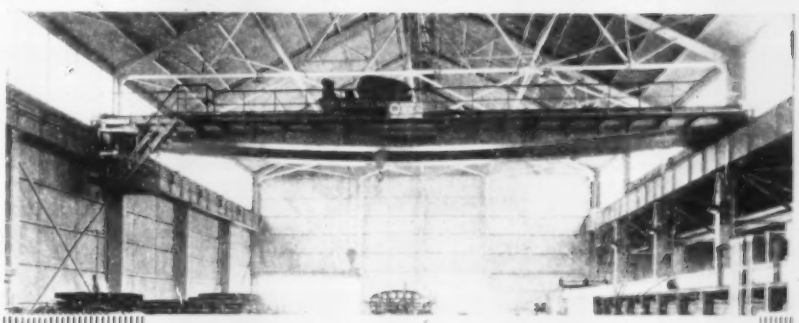

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Aside from our engineering knowledge and half a century of experience, one of the reasons is the help we get from our own customers. Helpful suggestions from a long line of users guided our engineers in designing cranes which emphasize utility and safety factors. In addition to cranes of every type, we supply structural steel, steel buildings and gray iron castings.

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prize of $500 and a third prize of $250. Papers emanating from a university source (author being an instructor, a graduate student or research fellow) are eligible for a $300 first prize and a $200 second prize. Undergraduate students may submit papers for a $250 award.

Ordnance Equipment Protected

Safety, compactness, economy and elimination of excessive handling are the reasons behind the selection by the Sperry Gyroscope Co., Great Neck, Long Island, of Dravo Transportainers for the movement of complex Army Ordnance equipment. Sperry's materials handling department studied several possible methods, then specified Transportainers, large welded steel containers, which permit shipment of the ordnance material directly to the Army site. Slightly modified in dimensions from standard stock models, 135 units are being used for the movement. Before leaving Dravo's Pittsburgh plant, each unit is fitted with special channels and frames so that the intricate ordnance equipment can be securely fastened in place.

Once the gear is removed at destination, the steel containers are returned for a new shipment. Gross weight of each individual shipment leaving the Sperry plant approximates 4½ tons. Transportainers were introduced by Dravo a few years ago to combat the huge damage and pilferage losses in ocean shipping. Locked inside the big 275-cubic foot capacity steel containers, small package cargo and valuable freight are practically immune from the ordinary hazards encountered in foreign commerce. In some instances, overseas shipments have been made in domestic packaging. Over 1900 Transportainers are now being used by more than 30 steamship lines as a service to their customers.

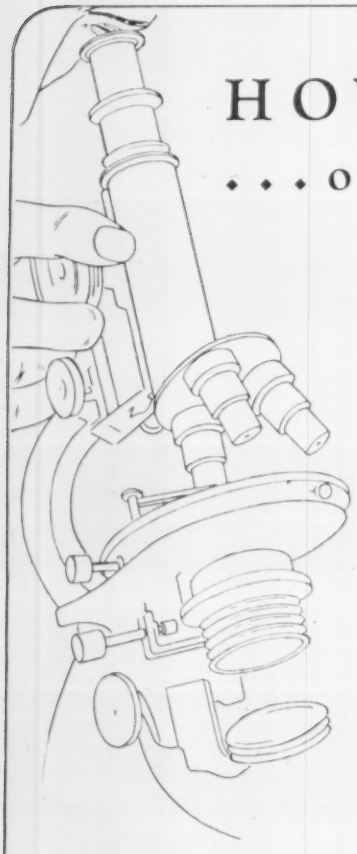
Lighting Maintenance Costs Cut

Time, cost and hazard of outdoor lamp maintenance is reduced by Perfection Stove Co., Cleveland, by using outdoor disconnecting and lowering lighting fixture hangers made by Thompson Electric Co., Cleveland. The lights illuminate the entire parking lot, all drives and building walkways. Climbing ladders to service them is made hazardous by the presence of automobiles and high fences surrounding the parking area.

Installation utilizes standard two-pole outdoor hangers incorporating deep canopies which protect the fixture and its connections from the weather. Individual light poles incor-

Grinding Costs Cut 75 Per Cent

ADVANTAGES resulting from introducing Heliarc welding to fabrication of air conditioning units at Evansville Sheet Metal Works, Evansville, Ind., are: Increased welding speed, a 75 per cent reduction in grinding costs, decreased loss of zinc, warpage problems reduced and neater appearance of finished weld. Units are 14-gage galvanized steel. No filler rod is used on inside seams using the equipment marketed by Linde Air Products Co., division of Union Carbide & Carbon Corp., New York



HOW BIG?
. . . or how small?

When you look at the industrial picture of New Jersey, you see big factories . . . and *small factories, too.*

New Jersey is small itself in a geographical sense . . . and that means that diversified plants are always *near at hand,* ready to supply the needs of neighboring manufacturers.

Small industry forms the backbone of the industrial team in New Jersey. In the busy days ahead, these diversified manufacturers will continue to add value and profits to the products they make.

How We Can Help: Public Service serves industry through special industrial representatives on problems relating to power, industrial fuel and lighting.

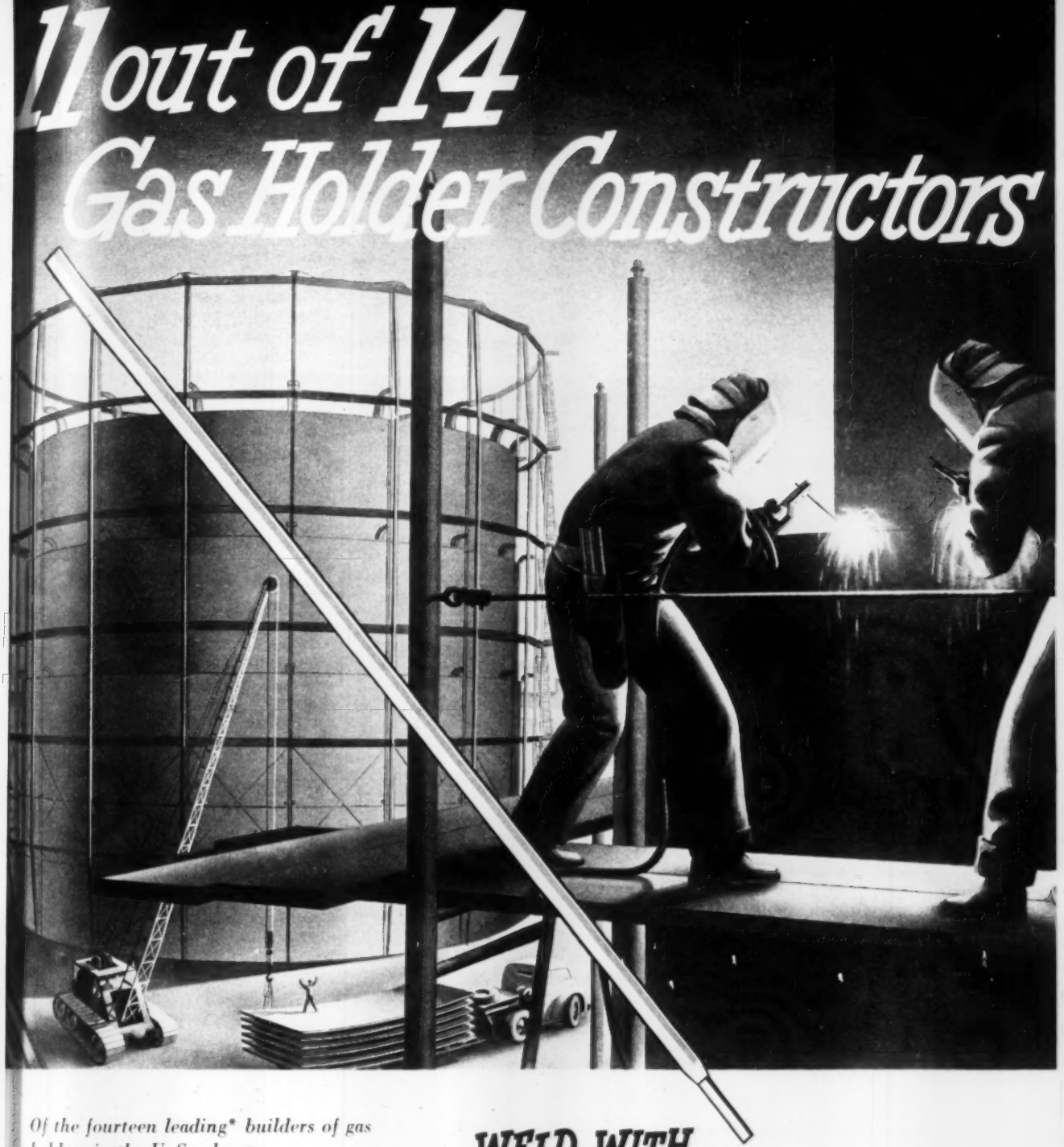
Also, Public Service can help find available space which you can lease, buildings which you can buy, or industrial sites. Our Industrial Representatives can guide you in securing information on markets, labor supply, taxes, transportation and other matters relating to plant locations.

FOR YOU:

Your copy of the 20-page digest about industrial New Jersey, "The Crossroads of the East", can be obtained by writing Box E, 76 Park Place, Newark, N. J.

Consider New Jersey
CROSSROADS OF THE EAST
PUBLIC SERVICE
ELECTRIC AND GAS COMPANY

11 out of 14 Gas Holder Constructors



Of the fourteen leading builders of gas holders in the U. S., eleven have long been regular users of Murex Electrodes.*

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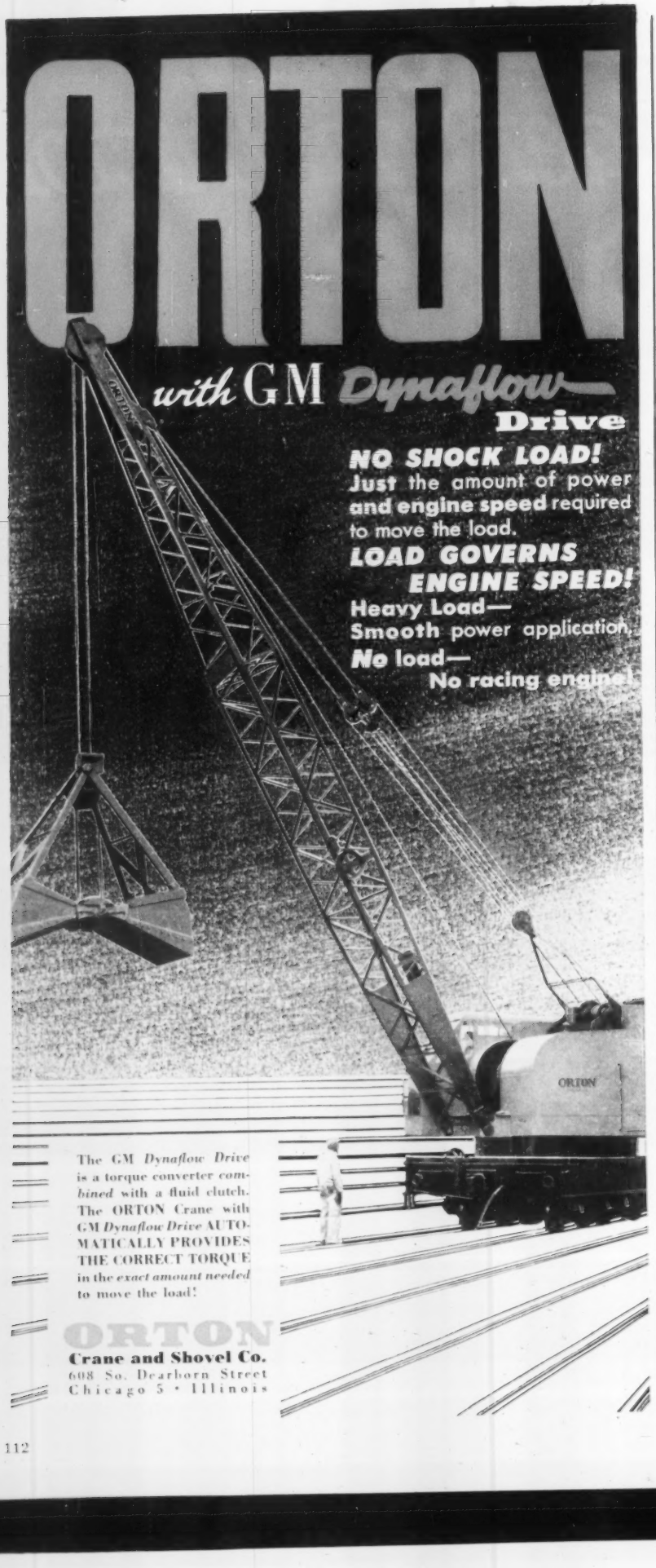
ORTON
with GM Dynaflow Drive
NO SHOCK LOAD!
Just the amount of power and engine speed required to move the load.
LOAD GOVERNS ENGINE SPEED!
Heavy Load—
Smooth power application.
No load—
No racing engine!
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The GM Dynaflow Drive is a torque converter combined with a fluid clutch. The ORTON Crane with GM Dynaflow Drive AUTOMATICALLY PROVIDES THE CORRECT TORQUE in the exact amount needed to move the load!
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porate from three to six hangers each of which is controlled independently from ground level and can be lowered for servicing. Fixed upper member of the fixture contains a pulley wheel for the operating chain or cable, a guide tube for positive repositioning and a pair of cup-type contacts to which power feed lines are attached. The lower member which supports the lighting fixture contains the positioning stem, latching mechanism and a pair of ball-faced contacts which join with the upper contacts to complete the circuit when the fixture is raised. Since the lowered fixture is dead there is no electrical hazard for the maintenance worker.

Experimental Color TV Tube

Wartime electronic tube used to jam enemy radar units is now investigated for use as a high-power transmitter for color television. This research was announced to the Institute of Radio Engineers by Westinghouse Research Laboratories who are collaborating in converting this device to its new role. The tube, called a Resnatron, is still in the laboratory stage but is believed capable of giving greater range and better reception, particularly in the color television field.

Tube has the ability to transmit bandwidths wide enough to carry all the detail for clear color pictures. Delivering 1500 watts of power, the Resnatron with modifications is expected to increase this output by six or seven times. The converted jamming tube is described as the most powerful of its kind yet developed.

Another Lathe Book Edition

Since the first edition of How to Run a Lathe came off the presses in 1907 containing only a few pages and illustrations, each issue published by South Bend Lathe Works, South Bend, Ind., has grown until the latest edition contains 128 pages and over 350 illustrations. Editions have been published in four foreign languages.

Texts cover such items as the correct installation and leveling of the lathe, grinding cutter bits, turning, boring, thread cutting, taper turning, drilling, reaming, tapping, machinability ratings and cutting speeds for various kinds of steels. Other data includes: Standard tolerances for press fits, running fits, push fits and sliding fits; allowances for finish turning, filing, polishing, grinding, reaming, lapping and honing; and tooling dimensions for South Bend lathes. Copies are available from the company in paper binding for 25 cents or in imitation leather for $1.

New Books

Automotive Transportation

Automotive Transportation in Industry, by Samuel J. Lee; cloth, 178 pages, 6 x 9 inches; published by Fleet Management Corp., Chicago, for $5.00; available from STEEL, Penton Bldg., Cleveland 13, O.

The book is a discussion of the peculiar problems and intricacies of the automotive type of fleet operation. In Part I, it presents a thorough analysis of the three principal forms of business transportation: Company ownership, fleet leasing and employee ownership. Advantages and disadvantages of each type are evaluated to aid the corporation executive to determine which form of transportation would best suit his particular requirements.

Part II of the book is virtually a manual of instruction for establishing a well managed fleet program in those companies operating company-owned equipment. It presents procedures for purchasing equipment, making replacements, handling major repairs, installing preventive maintenance schedules, organizing safety programs, etc.

It describes the services available through automobile dealers and leasing or rental companies and tells how to get the most out of these services. To the automotive industry, manufacturer, dealer, and leasing company executive, it explains the many perplexing problems fleet operators are constantly faced with and tells what can be done to improve the quality of service they render to national fleet users.

The publication is an effort to create an awareness on the part of business executives of the importance of good fleet management practices from all standpoints—economy, efficiency and safety.

Atomic Power in Peacetime

Economic Aspects of Atomic Power; cloth, 289 pages, 6½ x 10 inches; published by Princeton University Press, Princeton, N. J., for $6.00; available from STEEL, Penton Bldg., Cleveland 13, O.

This exploratory study under the direction of Sam H. Schurr and Jacob Marschak was published by the Cowles Commission for research in economics. It is an approach to the question: What will be the economic effects of peacetime applications of atomic power? It is stressed in the preface that the study is exploratory in a double sense. First, technological data which include future trends in the techniques of generating and using energy are incomplete. Second, the book is exploratory in the sense that it involves a new attempt to formulate an economic theory of the effects of an invention. As this subject is complicated, its treatment could only be tentative.

The book is divided into three parts: Part 1, Economic Comparisons of Atomic and Conventional Power; Part II, Atomic Power in Selected Industries; Part III, Atomic Power and Economic Development. Tables, maps and graphs are used to illustrate various points throughout the book.

The authors have concentrated on potential uses of atomic power that seem the least remote—the generation of electricity from heat caused by nuclear reactors and transportation of low temperature heat over short distances as for residential heating. An economic comparison for various areas of the world between electricity generated by atomic heat and that produced from coal, oil or water power is presented. This comparison by countries is followed by an analytical study of the potential applicability of atomic power in several industries which are or may become important consumers of electricity or heat. How atomic power could effect

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FOLLANSBEE POLISHED BLUE STRIP can be fed directly into automatics—a continuous, time-saving supply system for any kind of metal-forming operation.

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FOLLANSBEE METAL WAREHOUSES

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our national economy and the industrialization of the backward areas is also discussed.

The table of contents is followed by an analytical table of contents that lists the text of each chapter in detail. All references are listed at the end of the book. An index of personal names and a subject index are also included.

Methods for Chemical Analysis

1950 *Book of ASTM Methods for Chemical Analysis of Metals;* cloth, 476 pages, 6 x 9¼ inches; published by American Society for Testing Materials, Philadelphia, for $6.50; available from STEEL, Penton Bldg., Cleveland 13, O.

Replacing the 1946 edition, this book is a culmination of intensive work by ASTM Committee E-3 on chemical analysis of metals and the headquarters staff. In re-edited form all previous methods are included in the book and are supplemented by many new testing procedures which the committee has studied and improved. These newer methods take advantage of shorter procedures which have been developed and also cover additional metals. Thirty-nine extensive standards are covered in this edition.

Various metals and alloys discussed in this publication are: Ferrous metals—steel; cast iron; open-hearth iron; wrought iron. Ferroalloys—ferrosilicon; ferromanganese, silicomanganese and manganese-silicon; ferrochromium; ferrovanadium; ferrotungsten and tungsten metal; ferromolybdenum. Nickel-chromium-iron alloys. Nickel and nickel-copper alloys. Copper and copper-base alloys—copper-nickel and copper-nickel-zinc alloys; brasses; special brasses and bronzes; sulphur in special brasses and bronzes; copper and copper base alloys; copper. Aluminum and and aluminum base alloys. Magnesium and magnesium base alloys. Lead, tin, antimony and their alloys—Antimony metal; pig lead; lead and tin base solder metal; white metal bearing alloys; lead, tin, antimony and their alloys. Silver solders. Zinc—slab zinc (spelter); determination of iron in slab zinc (spelter); polarographic determination of lead and cadmium in zinc; zinc base die casting alloys; aluminum in zinc base die casting alloys. Spectrochemical analysis methods—tin alloys for minor constituents and impurities; zinc for lead, iron and cadmium; zinc alloy die castings for minor constituents and impurities.

The index lists each method and procedure under at least two broad headings—the material covered and

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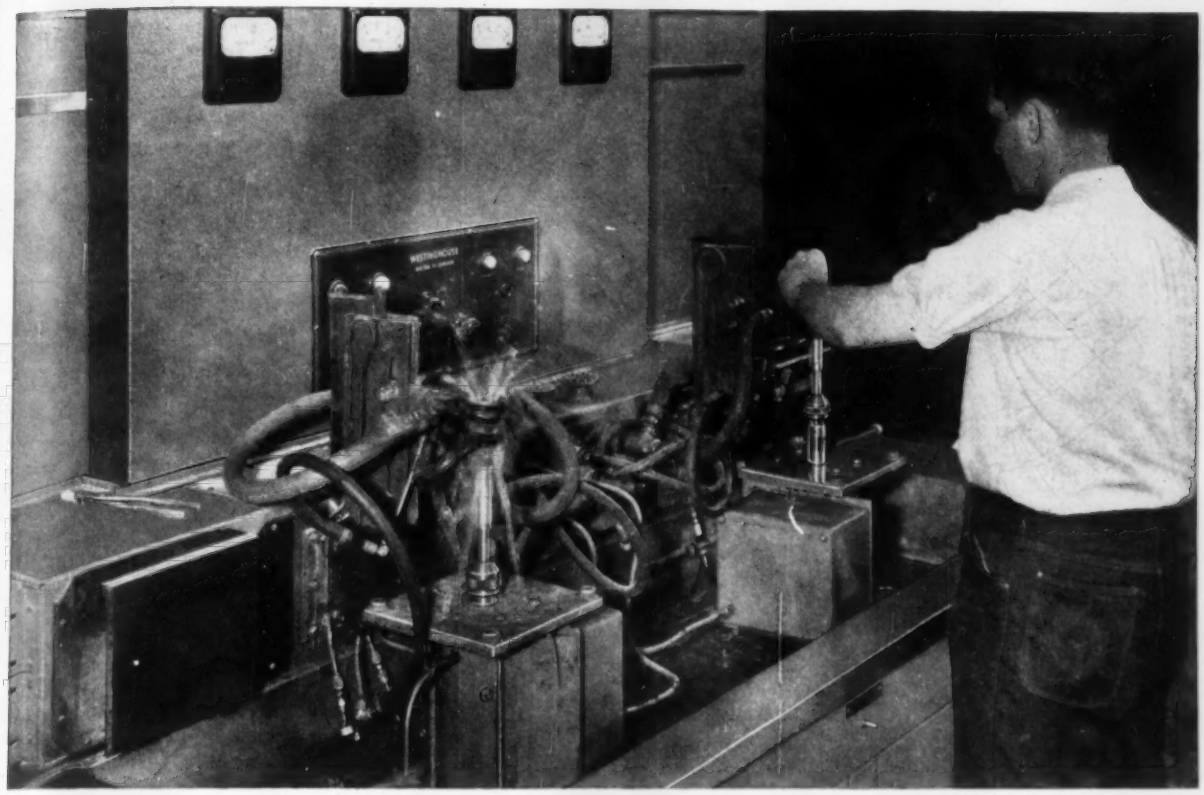

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PRODUCTION UP 226%; COSTS DOWN 60%!

Could you use production increases of 226% with direct costs lowered 60% in your quantity hardening? That's the mean average for five typical parts as reported by The Massey-Harris Company, Racine, Wisconsin, farm equipment manufacturers. Now sixty different parts, formerly carburized, are hardened by two Westinghouse 50 KW-450 KC RF generators with standard Westinghouse rotating-lifting spindles.

Such results are usual with Westinghouse RF equipment, and—added savings are realized with in-line production techniques, negligible ready time, production increases without plant expansion, and elimination of descaling, straightening and other operations.

Such flexibility and productivity pay high dividends. Examine Westinghouse RF heating possibilities NOW—they may solve your heat treating problems.

We'll be glad to help you increase *your* quantity hardening production and decrease *your* costs. Our engineering representatives will gladly consult with your staff (without obligation, of course); their experience has aided many manufacturers. Write today. Address: Westinghouse Electric Corporation, Department S-1, 2519 Wilkens Ave., Baltimore 3, Maryland.

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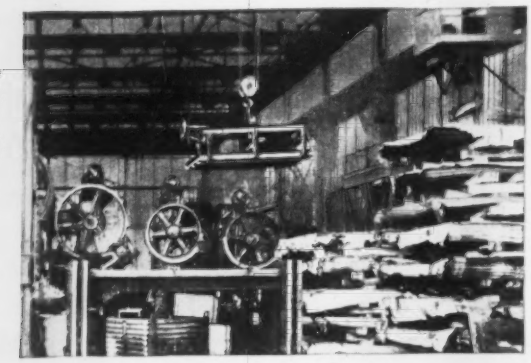
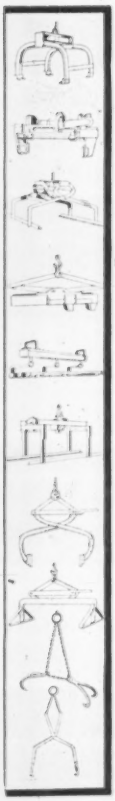
NOW- *take steel direct from storage to presses!*





At a large eastern plant for fabricating automobile bodies, Mansaver Grabs take sheet steel from the racks safely and quickly, then place it, *with no damaged corners*, in any position the pressman requires for production operations.

Mansaver Grabs are the hands of the crane — versatile, economical, safe. It will pay you to complete your cranes with Mansaver Grabs.

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When a touch on a button moves weldments like these into the correct, most convenient position for a downhand pass, you get more arc time, more welding at lower cost. C-F power operated Positioners rotate the work in a full circle at any point in a range of 135° from the horizontal—giving welders a choice of an infinite number of downhand welding positions instantly.

Every requirement for faster, better positioned welding—constant or variable speed table rotation, full 135° tilt, self-locking gearing which holds the table in any position, oversize built-in main tilt and rotating bearings, choice of two base styles, and many other features—are built into C-F Positioners.

C-F Positioners are available in Hand or Power operated models, and are made in capacities up to 30,000 lbs. and larger.

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CULLEN-FRIESTEDT CO., CHICAGO 23, ILL.

C-F positioned welds mean better, more economical welds

the substance being determined. Also, all methods in certain special classes such as photometric and electrolytic are so listed.

Besides recommended practices for apparatus and reagents, photometric analysis and for designating significant places in specified limiting values, there are sampling methods on steel and iron, ferrous alloys, wrought nonferrous alloys and cast nonferrous metals and alloys.

Many Uses for Iron Plating

Considerable interest is being displayed throughout industry generally, in the electro-deposition of iron on other materials. The reason for this interest is the increasing scarcity of the metals under NPA restrictions. Iron is not difficult to plate, as considerable improvement has been effected in the method of operation. A description of the solutions and methods involved is available from Hanson-Van Winkle-Munning Co., Matawan, N. J.

Solutions recommended for plating iron are: 1. Ferrous sulphate—33 ounces per gallon, ferrous chloride—4.8 ounces per gallon, ammonium chloride—2.7 ounces per gallon; and 2. ferrous chloride—60.2 ounces per gallon, calcium chloride—16.8 ounces per gallon. Iron has been definitely recommended for use as a plated coating both on its own merits and as a substitute for scarce materials. It will be found particularly applicable in the graphic arts and electroforming fields, acting as a substitute for either copper or nickel. It can also be used in the resizing of worn parts and for coating of conducting and non-conducting materials. Mismachined tools and worn Diesel cylinder liners have been salvaged successfully in this fashion. In electroforming, deposited iron has been used for record stampers, leather embossing dies, radar, plumbing, computing cams and printing plates.

Telephone Cable Facts Given

Electrical wire and cable department, United States Rubber Co., has published a catalog on specifications and engineering characteristics of latex insulated telephone cables. Statistics on capacity and power factors, transmission characteristics, aging, tensile strength, resistance and constructions, are included. A special section is devoted to a new cable splice housing developed by company engineers which eliminates hand taping. The booklet is obtainable from the department's headquarters in Rockefeller Center, New York 20.

Packaging Must Be Rugged

Best acceptable commercial practices specified in packaging instructions for military items are not always adequate, Col. John A. Way of the Munitions Board told engineers in Detroit. Items shipped overseas encounter space problems, rough and fairly primitive handling, unusual shipping conditions and storage in unprotected areas. Despite all these handicaps it is vital that items inside the package come out ready and fit for their intended use. If they don't meet this requirement then the loss is far greater than the cost of the item alone.

Packaging protection must be "beefed up" for shipment overseas, Colonel Way said. Laboratory experiments are an excellent guide in this direction but cannot replace actual facts proved by experience. Loss and damage reports plus experiences with material in storage or during shipment result in specifications constantly being modified. Some companies feel that military requirements result in "overpackaging" since many items do not go overseas but, he explained, that where it is known that equipment is intended for domestic consumption then packaging standards can be lowered. Items going into storage must be well packaged because their ultimate destination is unknown and there may be insufficient time to repackage when time to ship comes.

He explained this condition arose when Korean hostilities began and a large percentage of damage and loss resulted. The major effort in the Munitions Board is directed toward standardization of materials, methods and procedures used in preservation, packaging and packing of military supplies and equipment. Part of the solution might be right at the product design level, the colonel believes, and it is in this area that he would like to see some materials handling and packaging influence exerted.

Enameling Uses Sought

Completely new uses for porcelain enamel as a finish and also as a finish to permit substitution for critical metals is the goal set forth for the newly formed New Uses Committee of Porcelain Enamel Institute, Washington. A basic and long range program for the committee will be the research of entirely new applications for porcelain enamel as a finish for all types of products. A secondary but more immediate goal will be

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1. THE WORLD'S MOST COMPLETE LINE OF MONORAIL HOISTS—designed and built to withstand the most severe service—thus providing the widest possible range of machines from which to choose.
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We welcome an opportunity to study your needs and make recommendations. The tougher your problem, the more reason there is to call in a trained Shepard Niles specialist. He will save you time and cost in subsequent years of operations. Write us today.
COAL HANDLING MONORAIL
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CRANE & HOIST CORPORATION
Makes and sells all three lifting tools for airborne shop loads
CRANES • Overhead
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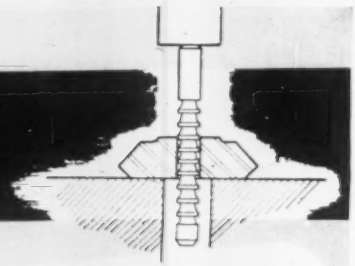
HELPFUL HINTS ON INCREASING BROACH LIFE



Page C-4

OILS FOR BROACHING

HEAVY DEMAND ON CUTTING FLUID

Broaching places a great demand on the cutting fluid due to the large amount of metal being removed and the necessity for maximum broach life and finish.

Stuart's THREDKUT and related products, due to their high effective sulphur content, have been outstanding for the most severe broaching work. Active or effective sulphur in an oil serves as an anti-weld agent preventing metal seizure, welding and scuffing.

QUICK FACTS!

SLOW SPEED BROACHING

For unusually slow speed broaching of ferrous materials it is often desirable to use oils of heavier viscosity (such as THREDKUT #25) that will not drain off of the broach and the work before it has completed its mission.

GOOD RULE OF THUMB

When excessive front clearance wear is observed on the cutting teeth of the broach, DECREASE active sulphur in the oil by diluting with paraffin oil or other blending oils. When poor finish is encountered due to pick-up and welding, apply Stuart's THREDKUT or THREDKUT #99 straight.

USE OF WATER-MIX CUTTING FLUIDS

On some flat surface broaching and on round hole work it is often desirable to use a water-mix cutting fluid of top quality. Stuart's SOLVOL, a heavy duty "soluble" oil, is widely recommended.

PROOF!

"With their regular oil they only broached 12 pieces when the broach wore badly and bugged. This is a 4140, 240-270 Brinell forged gear blank with a 1" hole and 1/4" deep keyway to broach at one pass with a combination broach, 1' for the round hole first, followed by 2' for the keyway.

"They put in THREDKUT #99 and the broach was still in good condition after running 1500 pieces." WRITE FOR LITERATURE and ask to have a D. A. Stuart representative call.

D.A. Stuart Oil CO.

2735-37 S. Troy Street, Chicago 23, Illinois

the research of applications for porcelain enamel as a finish which will reduce or eliminate the necessity for critical metals.

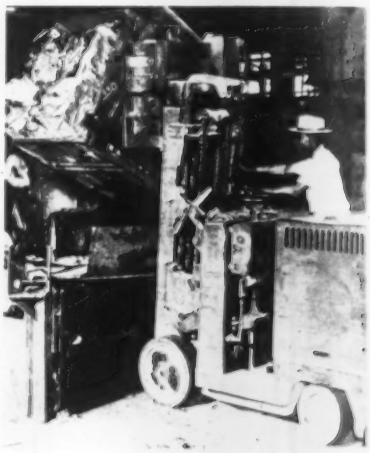
Actual experimental and development work on new applications will be carried out in the plants and laboratories of member companies on an assignment basis according to the interests and experience of the companies as related to the type of product. Completed information will be pooled later for the benefit of the entire membership. Defense applications are being given priority consideration and will be opened to the membership promptly.

Lathe Aids Metals Study

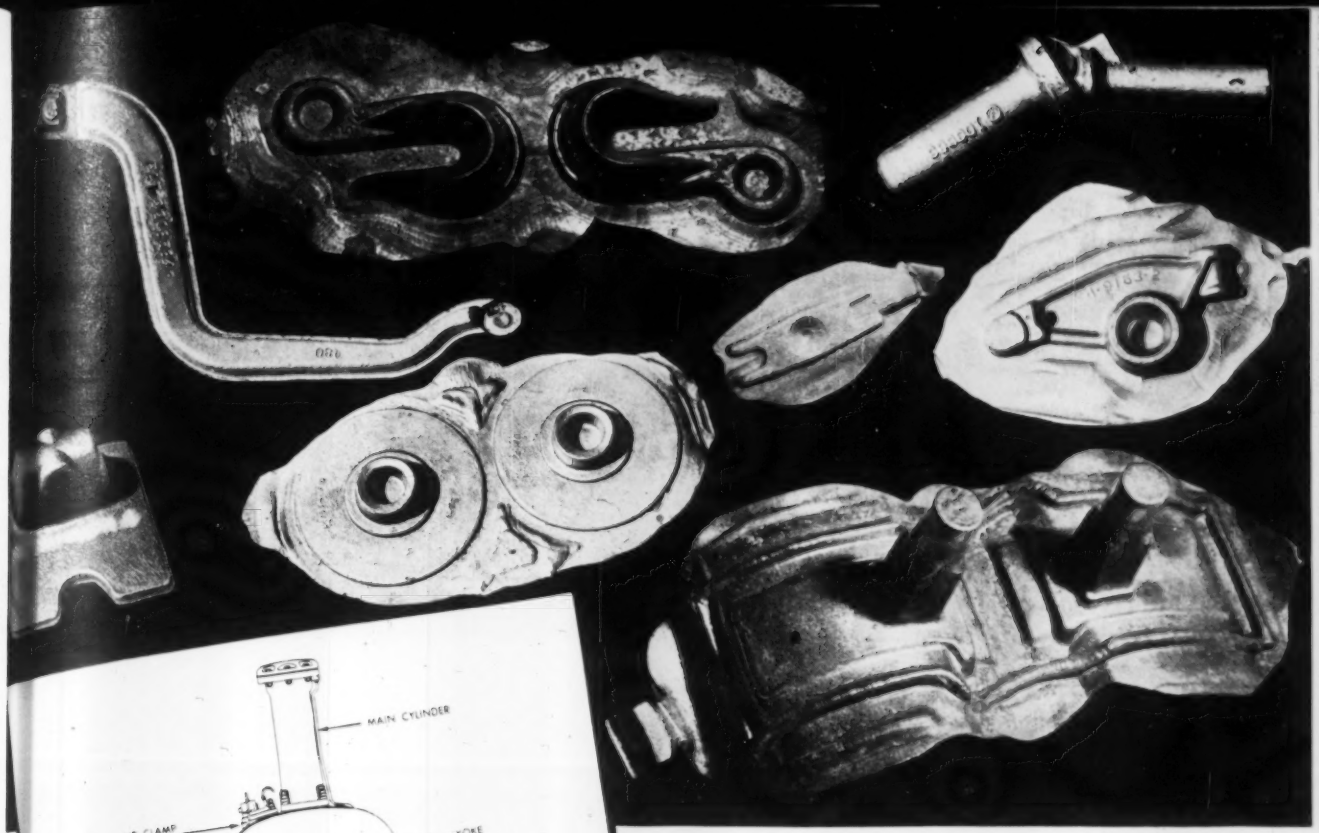
To facilitate the study of metal cutting problems in a research program conducted by Curtiss-Wright Corp. (see STEEL Mar. 12, p. 80) under contract from the Air Force, Monarch Machine Tool Co., Sidney, O., developed a specially equipped lathe. Basically a 13 x 42-inch Mono-Matic, its normal spindle speed range of 130 to 3000 rpm was stepped up to 6000 rpm maximum through special gearing and use of a 20-hp variable speed drive.

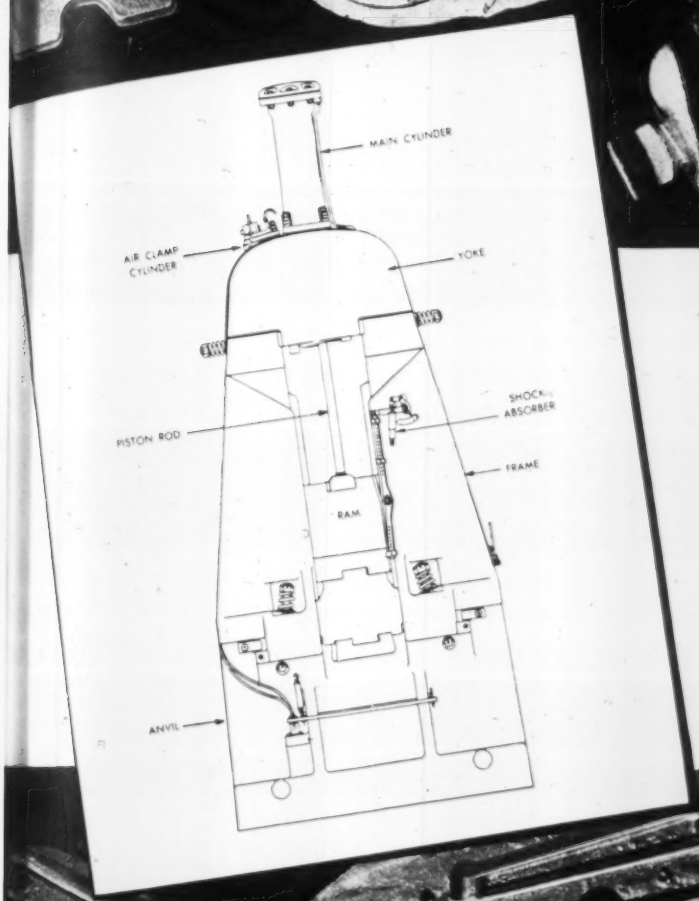
The tachometers used in selecting and maintaining the exact surface speed required for a given test are

Truck Charging Increases Melt



ROTATING HEAD fitted on a battery electric truck simplifies the charging of an aluminum furnace at General Smelting Co., Philadelphia. Truck's forks fit into special channels at bottom of charging box and enable load to be dumped in a matter of seconds. Former manual methods of charging required work of several men over an extended period of time with consequent delay in smelting cycle due both to time consumption and loss of heat from furnace





MANY FORGINGS CAN BE MADE FASTER, CHEAPER, MORE ACCURATELY ON THE CECO-DROP

The rapid striking action of the Ceco-Drop, the quick get-away of the ram after striking and the low center of gravity, insuring accuracy of die match, are a few of the reasons why forgings like these have shown increased production, more uniform accuracy and lower costs when transferred from other gravity drop hammers to Ceco-Drops. *Write for Bulletin 30-L-0.*

CECO-DROP

The Boardless Gravity Drop Hammer

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

ELIMINATE STEEL HANDLING BOTTLE NECKS

ROSS Series 100 CARRIER

...simplest mass handling method known!

Now... you can move 45,000-pound payloads of billets, bars, plate, in-process and finished steel *where* you want them *when* you want them... at a moment's notice!

Now... you can be free of the restrictions of a plant railroad handling system... its expensive trackage, cars, locomotives... costly, time-consuming switching operations!

Now... you can prevent congestion in the mill... free more mill space for production operations... eliminate costly re-handling ... save time and money in getting out current orders!

How? With Ross Series 100... the *only* Carriers designed and built all the way through for rough, tough steel mill service... the *only* Carriers with that great reserve strength steel men demand. Self-loading and unloading, Ross Series 100 requires only a driver... and moves capacity loads at speeds up to 33 mph.

Don't overlook the outstanding advantages of the Ross Carrier Steel Handling Method... ASK STEEL MEN WHO *KNOW!* Get full details on Ross Series 100 Carrier... a 'phone call, wire or letter will do it.

Rely On ROSS

THE ROSS CARRIER COMPANY

Direct Factory Branches and Distributors Throughout the World

450 Miller St., Benton Harbor, Michigan, U.S.A.

mounted on top of the lathe headstock. A mechanical, two-component dynamometer attached to the cross slide measures both cutting and thrust forces created by the turning operations.

It was found that any machining operation, including composition and geometry of the tool, heat treatment and microstructure of the material, and feed and speed could be pretested and evaluated more quickly and economically than with the ordinary cut and try methods of full scale testing.

Casting Machine Installed

Federated Metals Division, American Smelting & Refining Co., has installed a patented automatic casting machine, known as a Castomatic, in its Houston plant. The addition presages a mild revolution in the production and quality of solders and of type metals in the Southwest. The method is one by which liquid metal is maintained under pressure in a closed system from melting pot to mo'd and then cast automatically. Each cycle in the operation is controlled to fractions of a second by electronic means.

Castomatic solders are of the bar type. Bars of about $1\frac{1}{2}$-pound size are available in standard compositions. These are now being manufactured and delivered in the Southwest.

These Castomatic products which now enter the Southwest market fill better than was ever possible before the rigid metallurgical and physical requirements of type and soldering metals. In the words of John Harutun, manager of the Houston plant, "The Castomatic method represents one of the greatest single advances of the century in the casting of metals."

Abrasive Cloth Making Speeded

Abrasive cloth coating at 8 feet per minute is being accomplished at Simonds Abrasive Co., Philadelphia, since the company shifted to Chromalox all-metal electric radiant heaters.

The former heat source permitted a maximum web speed of $\frac{3}{4}$-foot per minute. The radiant heaters are made by Edwin L. Wiegand Co., Pittsburgh.

Cloth is coated with a synthetic resin and cured under infrared heat. In this operation rolls of cloth impregnated with abrasive grit are fed through a dip tank, pressed through rollers to squeeze out excess fluid, passed between radiant heater banks for curing and rewound on rolls. To

Be a wise bird about tubing

Bundyweld Tubing, double-walled from a single strip. Exclusive, patented beveled edge affords smoother joint, absence of bead, less chance for any leakage.

Why get yourself out on a limb with a tubing part that can't deliver the goods in your product?

Be like other wise birds and rely on Bundyweld . . . for lines that hold, come shaking or vibration, for coils that form right, or frames that are strong. The more stringent your needs, the better.

No other small-diameter tubing offers as much as this double-walled type of Bundy® tubing. It's extra sturdy, won't leak under pressure or give under normal strain. It's thinner walled, conducts heat faster and fabricates with ease.

For details, just get in touch with headquarters for small-diameter tubing . . . today.

Bundy Tubing Company

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World's largest producer of small-diameter tubing

AFFILIATED PLANTS IN ENGLAND, FRANCE AND GERMANY

Non-Collapsible PRODUCTION

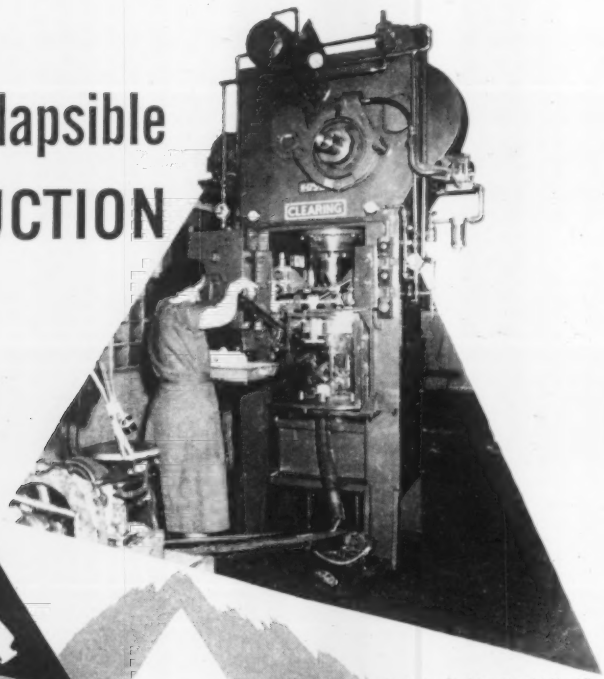

Photo by Sheldon Merritt Machlin

for Collapsible Tubes

With integrated production, where failure of one machine can stop a whole line, Peerless Tube Company chose Clearing presses for the extrusion operation which is the first stage in their lines. In the Bloomfield, New Jersey, plant, a group of 75-ton Clearings is now at work operating at 60 strokes per minute.

Clearing presses have demonstrated convincingly that they are dependable and can aid in maintaining production schedules at Peerless and many other companies throughout the world. We can help you with your mass production problems. Write us for details.

CLEARING MACHINE CORPORATION

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CMC CLEARING

CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION

heat the 27-inch wide cloth to installation has 24 heaters rated at 230 volts, 1400 watts. There are nine heaters on the front and back and three on each side. Two heaters are operated in series on 460 volts. Total installed capacity of these units is 33.6 kw.

Big Generator Has Test Run

A four-day trial run of a new 60,000 kilowatt turbo generator, large enough to furnish electric power for a city of 150,000, ended successfully at the South Chicago, Ill., plant of U. S. Steel Co. Generator is the largest of its kind ever built for industrial power production and has been under construction since June 1949.

The big generator, which is the key unit in a multi-million dollar improvement program at the plant's No. 5 power station, will go into operation early next month after completion of preliminary tests.

Power generated by the equipment being added to existing facilities to utilize by-product gas will be transmitted to the company's sheet and tin mill at Gary, Ind. A new boiler will produce steam for the generator at a maximum rate of 650,000 pounds per hour.

It is the largest unit ever designed to operate on blast furnace gas and will consume about 140,000 cubic feet of gas per minute at full operation. It has a capacity of 30,000 gallons of water.

Generator and boiler with automatic controls and auxiliary equipment for both are housed in a ten-story addition to the power station. Auxiliary equipment for the generator includes a 77,000 kva generator transformer, a 5000 kva auxiliary transformer, two 69 kilovolt oil circuit breakers and a 2300 volt switchgear unit for auxiliary power distribution.

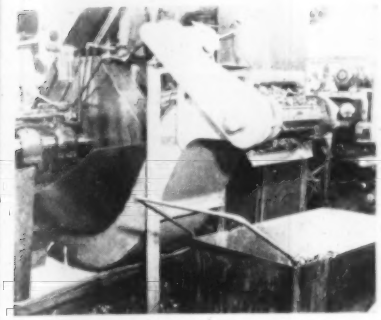
Tocco Supplies Hardening Arbors

In an article describing induction hardening the bores of small wing bushings and bearing races on screw machines at the general manufacturing division of Ford Motor Co., Detroit (STEEL, March 26, p. 74), inadvertent omission was made of the fact that the induction hardening arbors mounted on the screw machines, as well as the arrangement of high-frequency power generating equipment and coaxial cable, were designed by the Tocco Division of Ohio Crankshaft Co., Cleveland. There are now in operation, at Ford and at plants in other sections of the U. S., more than 30 screw machines equipped with this Tocco hardening setup.

New Products and Equipment

Conveyor Removes Chips

May-Fran Engineering Inc., 1725 Clarkstone Rd., Cleveland, O., introduces an improved model of the Chip-Tote conveyor. This unit continuously removes metal chips, borings and turnings from operating automatic or multiple-spindle production machines and eliminates the need for periodic shutdown of equipment for manual scrap removal. New features of this conveyor include a formed steel holddown which meters turnings, chips and other scrap passing up the conveyor belt. In operation, this device gradually compresses materials being conveyed into a compact, evenly distributed mass to eliminate jamming of the machine and prevent fallback of small pieces.



An adjustable clutch has been added to the power source for increased safety of operation. This clutch will slip if a load in excess of a preset limit is imposed on the conveyor belt. Conveyor unit can be furnished in sizes to fit practically all machine tools, standard or special, and its speed of operation can be synchronized with the metal removing capacity as well as the rate of flow of the coolant of the machine to which it is attached. Scrap material is confined to the conveyor by an overlapping wing design on the outside pitches of the conveyor. Perforated steel links can be supplied for application in which complete drainage of chips is necessary.

Check No. 1 on Reply Card for more Details

Processes Foundry Sand

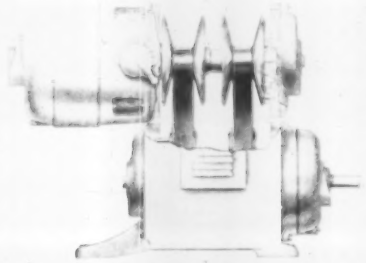
Newaygo Engineering Co., Newaygo, Mich., is marketing a new machine called the Reddy Sandy which performs automatically the complete shakeout and sand conditioning cycle without hand shoveling. Molds are dumped on the vibrating deck of the machine and not on the floor. Shakeout deck separates sand from castings and cores and the sand drops onto a vibrating screen to be separated from tramp iron and core butts. Sand then travels on a belt conveyor where smaller metal particles are magnetically removed. Automatic tempering, aerating and fluffing completes the sand processing.

Shakeout deck of the machine is a convenient height for dumping flasks. It can be used for mold sizes up to 20 x 30 inches and will handle up to 12 tons of sand per hour although occupying only 3 x 11 feet of floor space. Unit is furnished complete with motor, starter, pushbutton and 50 feet of cable with plug and receptacle.

Check No. 2 on Reply Card for more Details

Extra Heavy Duty Motor

Extra heavy duty motors for variable speed with ratings as high as 50 hp are announced by U. S. Electrical Motors Inc., 200 E. Slauson Ave., Los Angeles 54, Calif. Dual varibelts are employed to carry the heavy load through the internal speed changing transmission thus distributing the load so that no undue strain is imposed. To counterbalance belt load, tension control known as Autotaut has been designed.

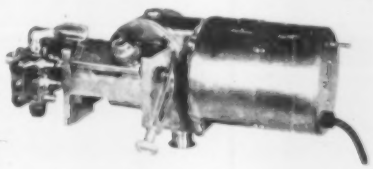


A calibrated spring is employed to maintain pressure between the two halves of the varidisks and the sides of the belt. Spring takes up any slack that might be caused by stretch or wear of the belts. Use of dual belts does not affect the ease of changing motor speeds which is accomplished by merely turning a control dial.

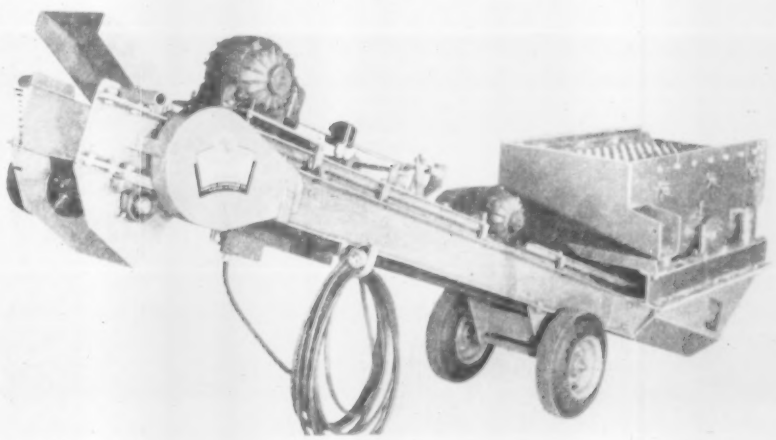
Check No. 3 on Reply Card for more Details

Metallizing Gun Simplified

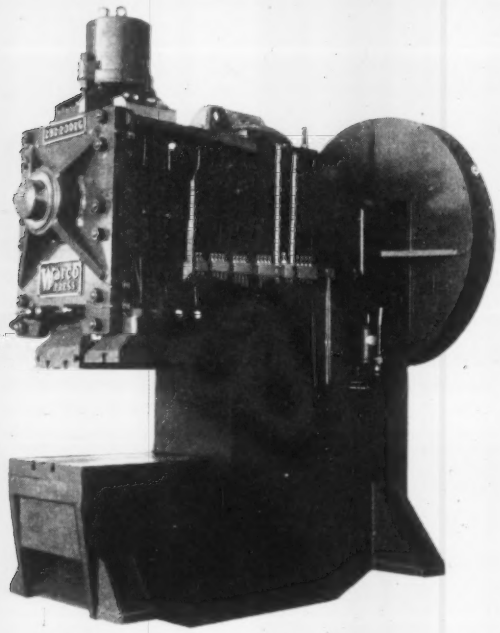
A metal spraying gun, designed for coating shafts, rolls, or machine element parts from a lathe mounting has been introduced by Metallizing Co. of America, 3520 W. Carroll Ave., Chicago 24, Ill. The Mogulectric has an increased spraying speed and can also be used for spraying tanks and structural members. It adds metal to metal via fine atomization of wire stock at 6300° F with a perfect bond. Other uses are the spraying of corrosion-resistant metal coatings and for reclaiming mis-machined castings and machine parts.



Gun weighs 20 pounds and is designed principally for stationary operation. It is powered by a 1/20-hp constant speed induction motor and will spray No. 15 B & S gage wire up to 3/16-inch diameter, from the lowest melting point metal to the highest. Speed is rated up to 18 pounds per hour for aluminum and nickel and up to 80 pounds per hour for zinc. When spraying 3/16-inch



WELDED STEEL CONSTRUCTION FOR GREATER DESIGN FLEXIBILITY



Because Warco designs and builds in components of welded steel and casting, Warco Presses and Press Equipment have a versatility unsurpassed in the industry. For example, the Eccentric Shaft Deep Throat Gap Press here was designed to take the place of a conventional punching machine to be used for punching holes in plate and structural members. This Press eliminates the positive type clutch. It minimizes operator fatigue and increases production by an instantaneous air clutch which includes inching feature for setting dies. If you want design flexibility in your machines — contact your nearest Warco representative.

Federal® WELDERS

Warco PRESSES®

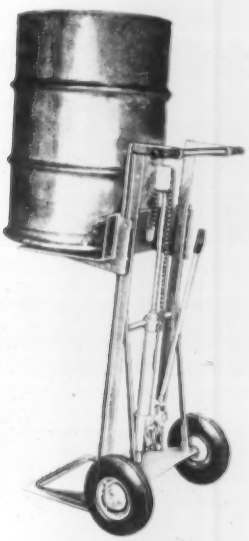
THE FEDERAL MACHINE & WELDER CO.
WARREN, OHIO

stainless steel the gun uses 44 cubic feet of acetylene and 68 cubic feet of oxygen per hour. Air requirement to atomize and carry the metal to the surface being coated is 16 cubic feet per minute at 45 psi.

Check No. 4 on Reply Card for more Details

Handy Lifter

A dual-purpose hand truck with a built-in hydraulic hoist for lifting and stacking is being introduced by Clark-Hopkins Equipment Corp., Philadelphia 23, Pa. Combination hand truck and stacker is used for loading and unloading heavy cases



and barrels from ground level where loading docks are not available.

Unit is of compact, sturdy construction and weighs 111 pounds. Capacity is 500 pounds and these loads can be lifted to tail-gate height of 54 inches. Platform is 19 x 22 inches for accommodating larger size packages. Front of platform is flush with the floor when lowered. Truck is equipped with 8-inch rubber wheels.

Check No. 5 on Reply Card for more Details

Rigidity, Capacity Increase

Conventional overhang for necessary bar travel has been eliminated in designing the boring and facing machine made by Forney's Inc., P.O. Box 310, New Castle, Pa., thereby providing greater resistance to bending stresses when boring, greater rigidity when milling and increased capacity when facing. Rigidity is obtained because the entire spindle housing with standard ASA No. 50 milling machine spindle nose moves into the face of the workpiece thus avoiding a long overhang.

Machine can be mounted as a stationary unit on a concrete foundation.

Inspection station of Magnaflux-Magnaglo Type MAL-3 Unit. Parts are loaded onto unit's endless conveyor and automatically processed with Magnaglo. Pertinent defects show up, marked with a glowing fluorescent indication under black light.

at Studebaker

Semi-Automatic **MAGNAFLUX*** Inspection Unit Saves Up to 32 Inspector-Hours per Shift . . .

100% INSPECTION at PRODUCTION LINE SPEED!

For parts so vital to safety as steering knuckles, knuckle pins and arms, the Studebaker Corporation insists upon 100% inspection. This Magnaflux-Magnaglo* Conveyorized Inspection Unit is more than living up to expectations — *and achieving multiple-savings besides.*

With this Magnaflux-Magnaglo Unit and a two-man team, up to 3800 steering knuckles are inspected per 8-hour shift. This compares with 3600 inspected parts per 6-man team previously . . . and represents a saving of 4 men or 32 man-hours per shift! Similar savings are realized in inspection of other steering components.

In addition, machining time on defective parts is eliminated, and more salvage made possible. Shot-blasting instead of expensive pickling of forgings is now possible, at greatly reduced cost.

Even if your inspection needs are not like those at Studebaker, Magnaflux can in all probability provide the effective answer — and achieve similar savings in man-hours and materials. Invite an experienced Magnaflux Engineer to discuss your problems soon.

•

Write for newly edited booklet of detail: "Maintaining Quality Standards in Industry."

MAGNAFLUX CORPORATION

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So, whatever your fire protection problem, let an expert C-O-TWO Fire Protection Engineer help you in planning complete and up-to-date fire protection facilities now. Write us today . . . tell us about your particular fire hazards, our experience is at your disposal . . . there is no obligation of course.

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Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems

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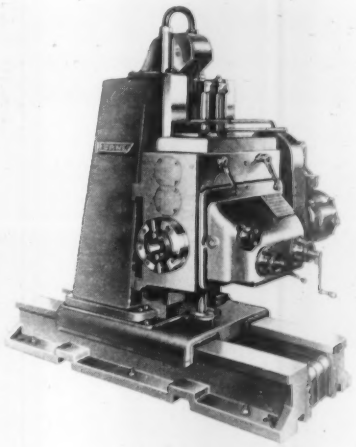
Large sectional cast iron floor plates permanently mounted adjoining the machine foundation serve as an anchorage for the workpiece brought to the machine. As a portable machine, it can be mounted to meet requirements and anchored to the same sectional floor plates that accommodate cumbersome workpieces. A large U bolt is provided at the top of the

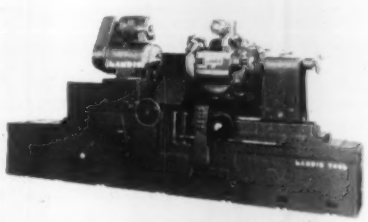


machine to facilitate moving by crane. After proper positioning of the machine, the required surfaces can be accurately faced and bored. It weighs about 10,000 pounds, is heavy enough to set securely and performs accurately any suitable machining operation.

Check No. 6 on Reply Card for more Details

Precision Grinder

Universal grinder for large diameter work is available from Landis Tool Co., Waynesboro, Pa. Identified as the type CHW, grinder handles up to 48-inch diameter work. Lengths



between centers are 48, 72, 96 and 120 inches. Parts such as turbine shafts, motor armatures, water valves, and track carriers can be ground on this machine.

Wheelbase, headstock and work table can be swivelled and traveling wheelbase permits grinding full range of diameters from zero to maximum capacity. Carriage ways are extra wide for stability in handling large

Less than ONE DAY a year for maintenance!

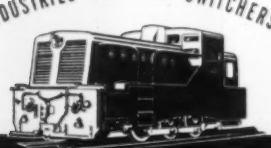
"That's the cost-cutting performance record of our dependable 30-ton Plymouth Locomotive!" writes Whitehead & Kales Company, River Rouge, Michigan, manufacturers of structural steel, steel products, and highway trailers.

"Our Plymouth switches and hauls as many as five carloads of steel and ten empty cars," says Mr. Crosby Wyman, the Company's Purchasing Agent. "It operates economically and has greatly increased efficiency. In 2½ years of operation, Plymouth has required just 50 hours of maintenance —less than a day per year!"

Built in 3 to 70-ton sizes for narrow and standard gauge, Plymouth Locomotives are cutting costs and speeding production throughout industry. Whatever your hauling needs, there's a Plymouth for the job! Write today for new complete catalog.

All Plymouth Locomotives can be equipped with the new Plymouth Hydraulic Torque Converter for exceptional ease of control and smoothest operation. Address your request for information to: PLYMOUTH LOCOMOTIVE WORKS, Division of The Fate-Root-Heath Company, Dept. A-1, Plymouth, Ohio.

INDUSTRIES' FAVORITE SWITCHERS

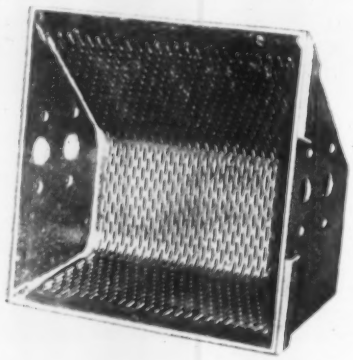


PLYMOUTH LOCOMOTIVES

GASOLINE, DIESEL, AND DIESEL ELECTRIC

PLYMOUTH LOCOMOTIVE WORKS • Division of The Fate-Root-Heath Co., Plymouth, Ohio, U.S.A.

Typical of Hendrick's
Manufacturing Facilities



Hendrick is exceptionally well equipped to manufacture to specifications a wide range of metal products that involve such operations as perforating, shaping, forming, welding, brazing, riveting, etc. The perforated elevator bucket illustrated is typical of the many specialized articles for whose fabrication Hendrick has unusual facilities. Write us in detail regarding any metal product you desire fabricated.

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Large stock of highest quality idlers, anti-friction bearings, permanently lubricated.

TRANSALL INCORPORATED
105 North 11th St. Birmingham 4, Ala.

work. Swivel table is adjustable for grinding tapered work. Dual controls are available so that the machine may be operated either from the front or from the rear depending upon the shape of the workpiece. It is also available as a plain grinder for use in single purpose high production operations.

Check No. 7 on Reply Card for more Details

Turning Radius Decreased

Shorter length, shorter width, and narrower turning radius are features of the 2000-pound capacity fork lift trucks, now manufactured by Buda Co., Harvey, Ill. Fork lift trucks are

available in 24 and 15-inch load centers.

Models are powered with a four cylinder, 61 cubic inch displacement engine and are available in five standard masts with a lift of 72, 84, 108, 114 and 120 inches. Single gear shift lever mounted on the steering column, full front vision instrument panel with a complete set of gages, and $9\frac{1}{4}$-inch diameter clutch that is replaceable in 30 minutes without transmission removal are additional features of both models.

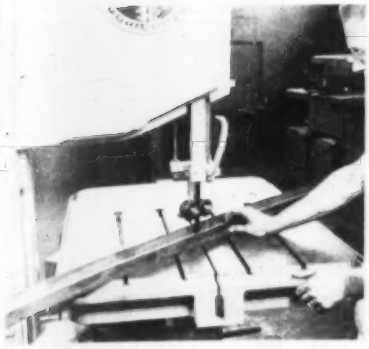
Check No. 8 on Reply Card for more Details

Angular Band Sawing

Saw guide blocks for 30 degree angle cutting by band sawing machine greatly increases the throat capacity and are obtainable from DoAll Co., Des Plaines, Ill. Angle guide blocks add to the vertical bandsaw's versatility. They get around the work length limitation imposed by the machine's throat capacity. For example, a 36-inch throat machine with standard guide can cut stock 36 inches long.

However with 30 degree angle guides; there is no limit to the length of extrusion or bar stock that can be handled. With these guides pieces of stock as much as 15 inches in diameter can be cut off square or at any desired angle with no limita-

tion of length of the piece to be cut. For the Zephyr high speed bandsaws there are 30 degree insert type guides and also 45 degree roller type guides available. For the Contourmatic there are three types of angle guides: 30-degree insert type for

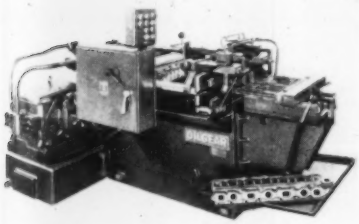


blades up to ½-inch in width, 35 degree roller type for high speed operation with blades up to 1 inch wide and 45 degree insert type for use with ⅝, ¾ or 1-inch wide blades at conventional metal sawing speeds.

Check No. 9 on Reply Card for more Details

Multiple Broached Bushings

Twelve valve guide bushings, previously pressed into a six cylinder truck engine head simultaneously on a 25-ton two-column vertical press, are broached simultaneously on a 16-ton horizontal broaching machine, designed by Oilgear Co., 1560 W. Pierce St., Milwaukee 4, Wis. Machine fea-



tures selector switch for semiautomatic or manual control; fully interlocked cycle to protect tools and work; conveyor height design; variable broaching and return speeds; hydraulic clamping and group handling of tools.

For the semiautomatic cycle, operator moves block from conveyor into fixture against a positive stop, locating pins are inserted and valves hydraulically actuated. Second lever is moved to thread the 12 tool shanks through head and into pullers. Broaching stroke is begun while pullers grip tools automatically. Limit switch stops crosshead when tools leave work and operation is reversed. Head is

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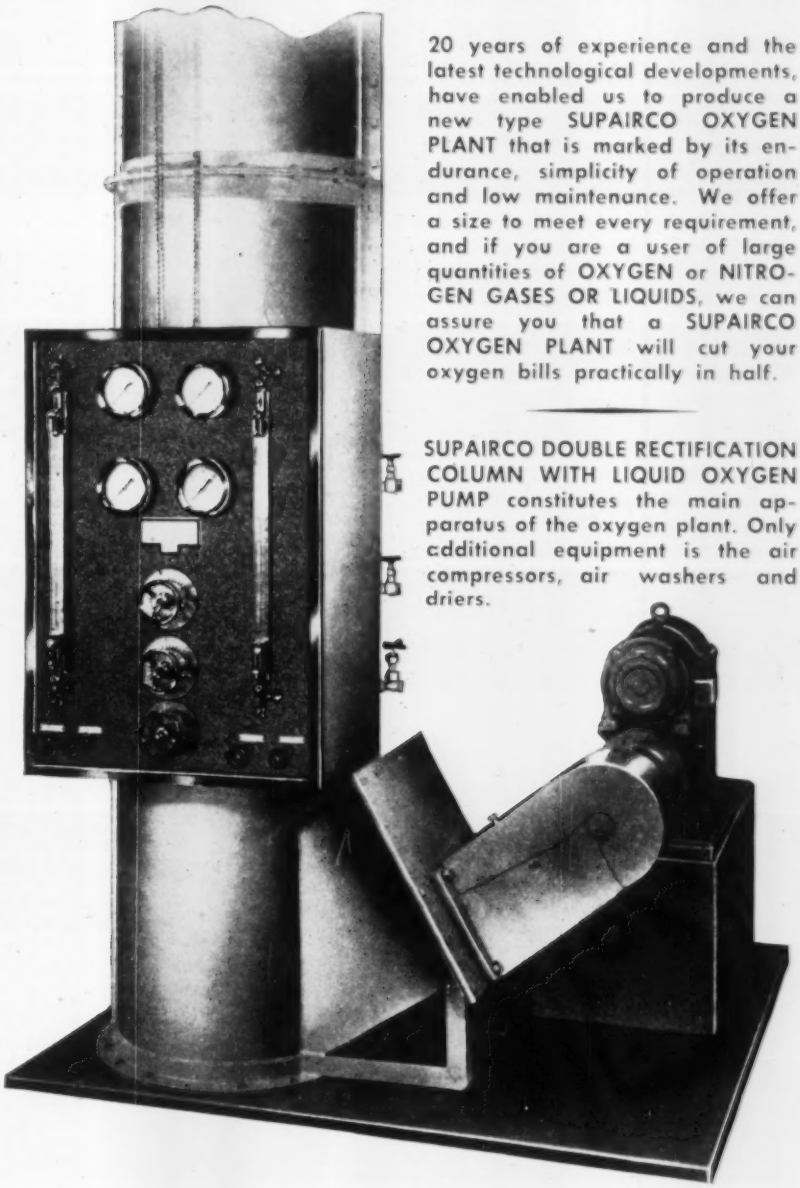
Oxygen

FROM AIR

at Lowest Costs to You



20 years of experience and the latest technological developments, have enabled us to produce a new type SUPAIRCO OXYGEN PLANT that is marked by its endurance, simplicity of operation and low maintenance. We offer a size to meet every requirement, and if you are a user of large quantities of OXYGEN or NITROGEN GASES OR LIQUIDS, we can assure you that a SUPAIRCO OXYGEN PLANT will cut your oxygen bills practically in half.

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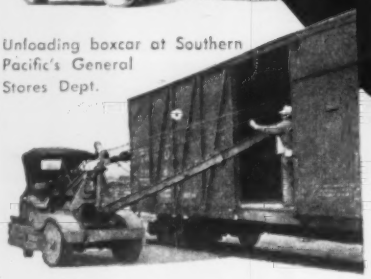
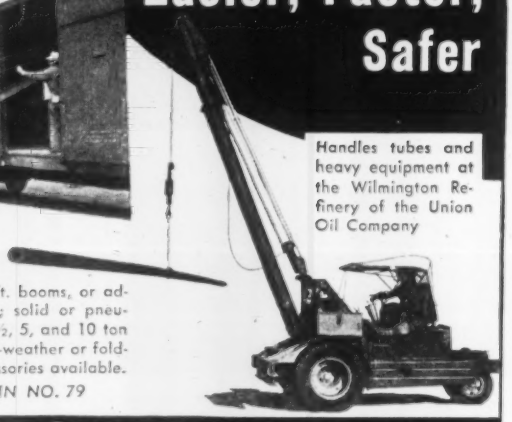
Heavy Industries Use KRANE KAR SWING-BOOM MOBILE CRANE to Cut Costs by Handling Loads Easier, Faster, Safer

Stocking fittings at a Los Angeles Public Utility

Unloading boxcar at Southern Pacific's General Stores Dept.



Handles tubes and heavy equipment at the Wilmington Refinery of the Union Oil Company

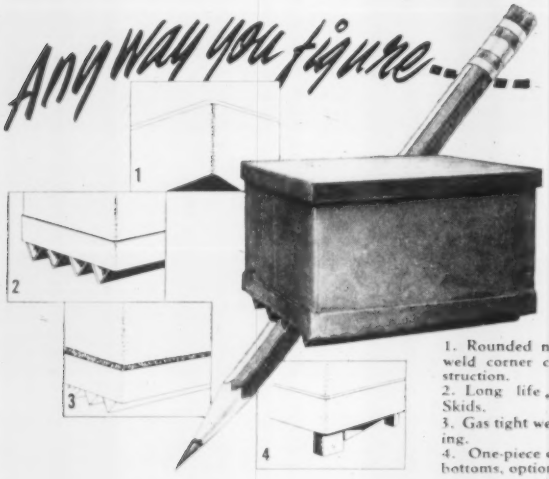


Gas or diesel, 12 to 37 ft. booms, or adjustable telescopic booms; solid or pneumatic rubber-tires. 1½, 2½, 5, and 10 ton cap. Buckets, magnets, all-weather or foldable tops, and other accessories available.

WRITE FOR BULLETIN NO. 79

SILENT HOIST & CRANE CO. 849 63rd ST., BROOKLYN 20, N.Y.

Any Way You figure...



1. Rounded non-weld corner construction.
2. Long life, V-Skids.
3. Gas tight welding.
4. One-piece cast bottoms, optional.

You're Production Time Ahead with STANWOOD CARBURIZING BOXES!

Rolled plate sides mean less box weight, more space per load for your parts. Stanwood's top-to-bottom even expansion and contraction gives you far more hours of service life under high temperature operation. For extra strength all corners are formed instead of welded. All necessary welding is gas tight. One-piece combination cast bottoms and legs are available for extra-heavy loading. Get the very latest information on industry's most up-to-the-minute carburizing boxes. Write for Stanwood Catalog

Stanwood Corporation

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FABRICATED METAL PRODUCTS

CARBURIZING BOXES

BASKETS

FIXTURES

TRAYS

RETORTS

pushed out of fixture onto conveyor. Peak capacity of machine is 18,000 pounds pull. Adjustable stroke of 6 to 15 inches is available. Broaching speed is 30 fpm with a return speed of 25 fpm. Net weight of this press is 8060 pounds.

Check No. 10 on Reply Card for more Details

Pocket-Size Tester

A lightweight pocket-size hardness tester is now marketed by the A. H Co., Brighton, Mich. Approximately the size of a slide rule (8¾ x 1½ x ½ inches), the tester is a radical departure from testers presently in use. It obtains hardness readings based

on surface elasticity of the objects tested. Simple hammer with nonelastic Carboloy tip is allowed to drop a determined distance and rebound to reading position.

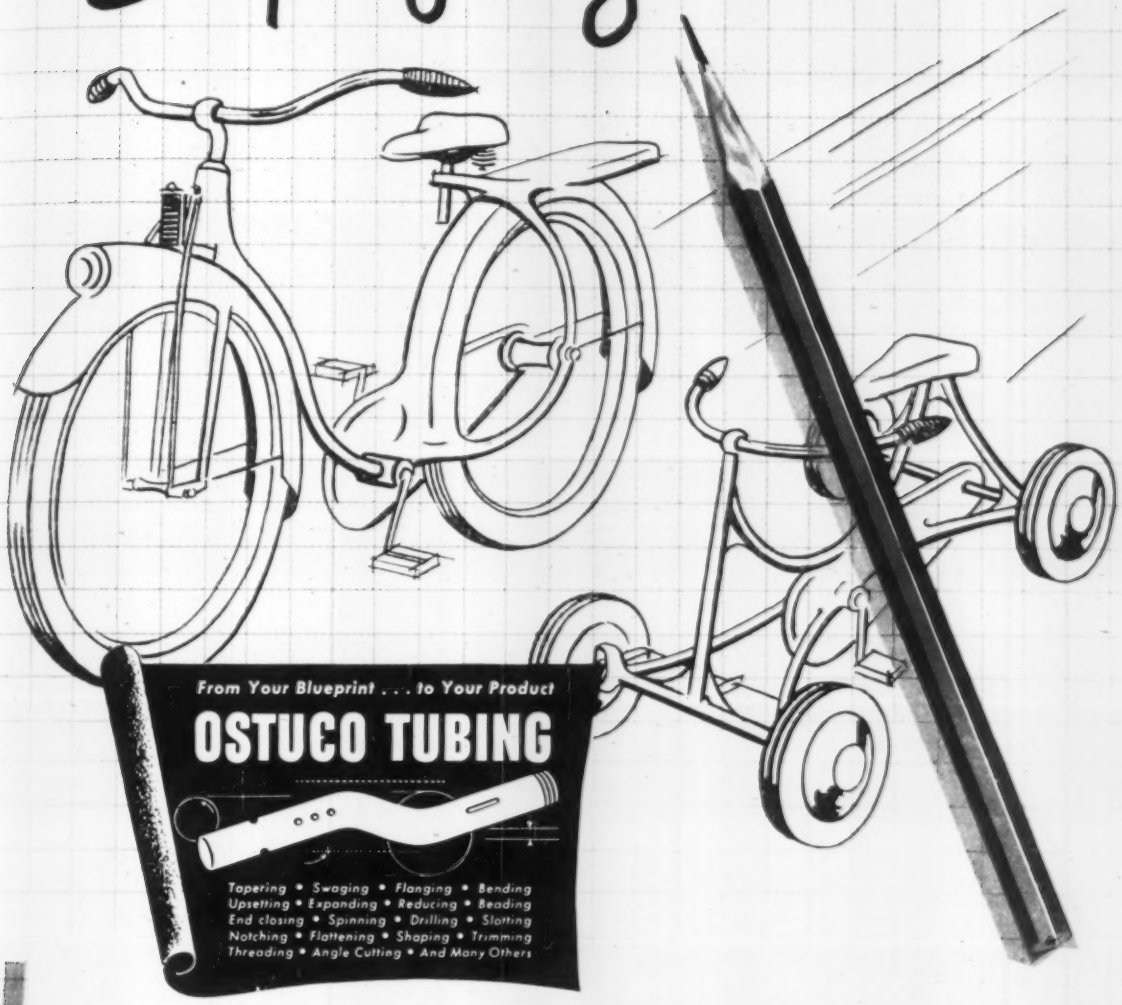
Conversion charts accompany the tester so that comparative Rockwell or Brinell hardnesses can be quickly obtained. Self-contained tester provides a simple and inexpensive control method for general use.

Check No. 11 on Reply Card for more Details

Stock Loading Beam Scale

The Load King, a platform beam scale, designed for fast accurate low-cost industrial weighing applications is announced by Yale & Towne Mfg. Co., Philadelphia Division, 11000 Roosevelt Blvd., Philadelphia 15, Pa. The scale is designed primarily for use where shock-loading is the rule. Lever system in the platform is all-steel as are other key parts. Poises on the main bar are mounted on roller bearings for rapid positioning. Scale features a 100 per cent end loading platform which gives the same reading regardless of the location of the load on the platform. Platform is mounted on outboard bearings to ab-

Shape of things to come...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While we cannot always promise early delivery estimates on new civilian orders, our experience-wise engineers are at your service to help make your *future plans take shape* with OSTUCO Steel Tubing.

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sorb shock of moving loads without damage to the scale. It will not tip.

Pit requirements for the scale are 11 inches, saving considerable expenditure on excavation when the scale is installed. It is built in capacities up to 6400 pounds. Platforms for the new scale range from 46 x 38 to 76 x 54 inches.

Check No. 12 on Reply Card for more Details

Explosion-Proof Motor

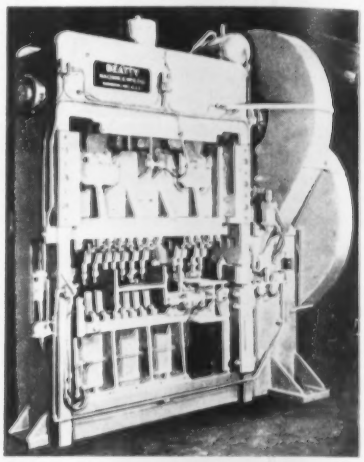
New totally-enclosed, explosion-proof direct current Life Line mining motors, either nonventilated or fan cooled, are available from Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa. These motors conform to designs approved by the U. S. Bureau of Mines for use in gassy and dusty mines. They will withstand an internal explosion, and will not ignite an explosive mixture outside the motor. Motors can be obtained in the range ½ to 20 hp, for use on 230, 250, 500 and 550 v with series, shunt, or compound windings. Speed range varies from 850 to 3500 rpm.

Prelubricated, double-sealed ball bearings provide effective lubrication without attention for the life of the bearing. All field and armature windings are thoroughly impregnated in thermoset varnish for additional protection against conditions of extreme moisture. Motor features allsteel construction with one piece rolled steel frame.

Check No. 13 on Reply Card for more Details

Flange Puncher

Guillotine beam punch for punching flanges and webs of beams 6 to 30 inches is announced by the Beatty Machine & Mfg. Co., Hammond, Ind. Guillotine design causes deflection to be upward and does not cause a buckling effect on punch and die units, rigidity is increased, and alignment is more accurate. The No. 9 punch, 200-ton capacity, will punch four 15/16-inch diameter holes through 11/16-inch mild steel plates. Additional holes are punched by staggering the lengths of punch stems.



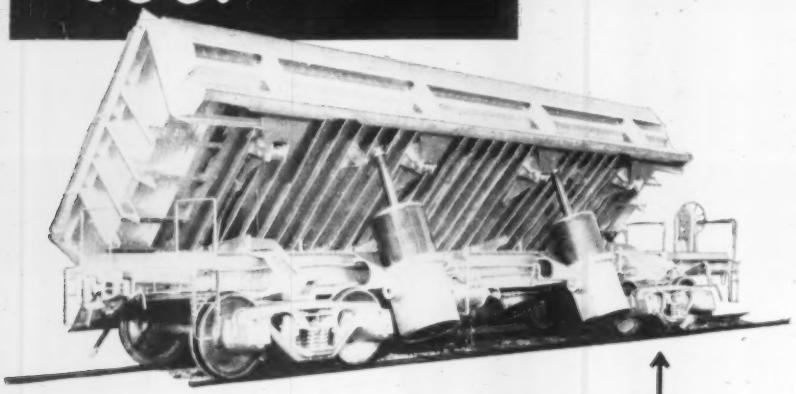
Die levels are same for punching both flanges and webs of beams, enabling the user to punch wide plates the full length of the ram. Full punching load may be taken at either end or at the center of the ram. Clutch operation is by means of pushbutton controlled solenoid air valve and cylinder. Punch is available in three sizes: No. 8 for beams up to 24 inches. No. 9 for beams up to 30 inches and No. 11 for beams up to 36 inches.

Check No. 14 on Reply Card for more Details

Enclosed Gear Head Motor

Sterling Electric Motors Inc., 5401 Anaheim-Telegraph Rd., Los Angeles 22, Calif., has introduced a Slo-Speed (geared head) totally enclosed fan-cooled motor with motor mounted disk type brake. The brake can be supplied for either stopping or holding service. Both motor and brake are totally enclosed and dust tight, especially designed for use in atmospheres containing nonexplosive dust.

BOOSTS EARNINGS TOO!



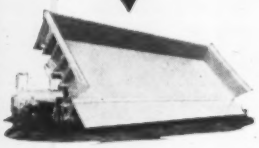
The Differential Air Dump Car has a way with operating expenses — cuts 'em down!

There's another pair of massive muscles on the other side of the car, too, means two-way dumping and greater flexibility.

They're built to take rough treatment — whether it's the slam-banging of the clam or the sudden dumping of tons of hot slag. These cars can take it and can come back faster for more.

Higher ratio of payload to dead weight! Fewer trips to the shop and shorter stays when they do go! Add all these up and it spells lower operating costs — another way to say "Boosted Earnings". Write for the full story on these cars.

DUMPS BOTH WAYS



Other Differential Products: Locomotives, Mine Cars, Mine Supply Cars, Rock Larries, Mantrip Cars, Dumping Devices and Complete Haulage Systems.

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Export Dept.: Chrysler Building, New York 17, N.Y.

A NEW STEEL...A NEW PRODUCTION OPPORTUNITY

It's Union Drawn's new Bessemer steel—B-1113-X. Where your equipment and the design of your parts will accept higher speeds—where longer tool life is practical—B-1113-X may stimulate production rates. Your Union Drawn Field Service Man can tell you in a hurry. Write, wire or 'phone.

Republic UNION® COLD DRAWN STEELS

REPUBLIC STEEL

Free-Machining Bessemer, Alloy and Enduro Stainless Steels • • Union Cold Drawn Special Sections

Union Cold Drawn and Ground Rounds; Turned and Polished Rounds; and Turned, Ground and Polished Rounds (Union Precision Shafting)

vapors and other injurious foreign materials.

Motor is manufactured in ratings ranging from 2 to 15 hp and AGMA speeds from 280 to 30 rpm inclusive. Dual cooling system provides an internal fan to circulate air inside the motor and an outer fan to pass a cooling blast of air over the streamlined case. Motors have labyrinth seals, heavy duty ball bearings lubricated for life, patented herringbone rotor and a simplified gear system in a balanced design from power intake to drive shaft.

Check No. 15 on Reply Card for more Details

• • •

NONMELTING GREASE: Kantmelt, a new lubricating grease for use on either plain or antifriction bearings in all locations in industry where both cling and lubricity of lubricant should be maintained despite high operating temperature, is offered by Specialty Products Co., Jersey City 2, N. J. It is a synthetic grease, that does not melt and contains no metallic soaps, fatty acids, filler, water or alkali.

Check No. 16 on Reply Card for more Details

DIAL FOR REGULATORS: A new calibrated dial for use with its class T and M type temperature regulators is introduced by Leslie Co., Lyndhurst, N. J. A quick turn of the dial to the desired setting is all the attention that is necessary.

Check No. 17 on Reply Card for more Details

STAGGERED TOOTH FILES: Extension of the staggered tooth principle to its entire line of double cut files and improvements in the design of taper files are announced by Henry Disston & Sons Inc., Philadelphia, Pa. These files can be operated on principle of cutting rather than scraping.

Check No. 18 on Reply Card for more Details

MAGNIFYING LENS: Model No. 1234-U45, 5-inch double convex magnifying lens, offered by Larrimore Sales Co., St. Louis 1, Mo., is indirectly lighted by four 6-watt fluorescent tubes arranged in a square around the lens area; there are no shadows. All fluorescent tubes or black light tubes may be used.

Check No. 19 on Reply Card for more Details

HAND PUMPS: Three new high vacuum hand pumps are introduced by Tokheim Oil Tank & Pump Co., Ft. Wayne, Ind. Model 970 has a nondrip discharge spout which simplifies filling cans and small containers. Model 971 is equipped with 8-foot static wire hose and UL recommended vacuum breaker. Model 972 is equipped in the same manner as 971, but also has an 8-gallon flow meter. All three have bung adaptors with vise-type screw which can be tightened on suction stub without a wrench or pliers.

Check No. 20 on Reply Card for more Details

PAINT-BONDING PROCESS: Poly-Kote, developed by Kelite Products Inc., Los Angeles 54, Calif., for the treatment of iron and steel preparatory to painting, eliminates the need for treating with chromic acid. It forms a dense smooth film of low porosity and high plasticity which cannot absorb paint excessively. The uniform coating can be controlled to provide a light or heavy paint bonding film.

Check No. 21 on Reply Card for more Details

CUTTING OILS: Texas Co., New York 17, N. Y., introduces new Transultex cutting oil series, grades A, A-1 and B which achieve improved cutting characteristics while maintaining primary advantage of transparency.

Check No. 22 on Reply Card for more Details

SHARPENS DRILLS: Drill grinding attachment No. 1296 for sharpening steel drills of any size from ⅛ to ⅝-inch, using a standard tool grinder, is available from Delta Power Tool Division, Rockwell Mfg. Co., Milwaukee 1, Wis. As assembled, it is arranged to produce the standard 118-degree lip angle with 12 to 15 degree heel or clearance angle. It may be adjusted for other lip and clearance angles if desired.

Check No. 23 on Reply Card for more Details

20 DEGREE PRESSURE ANGLES: Standardized stock spur gears and steel miter gears cut 20 degrees pressure angle instead of the usual 14½ degrees, are introduced by Boston Gear Works, Quincy, Mass. The increased pressure angle permits savings of 20 per cent in space, weight and cost.

Check No. 24 on Reply Card for more Details

POLISHING TALLOWS: Hanson-Van Winkle-Munning Co., Matawan, N. J., announces a new line of polishing tallows available in three types. Tallow 5B41 is a material with excellent lubricating qualities, medium high melting point and good saponification characteristics. Type 5B42 has higher lubrication and saponification properties than 5B41. Type 5B47 is highly saponifiable and gives good lubrication.

Check No. 25 on Reply Card for more Details

INCREASES SAFETY: Designed for convenient mounting, the new operating mechanism for switches and circuit breakers announced by Square D Co., Milwaukee 12, Wis., permits the disconnect to be mounted directly on the panel without the use of posts or brackets. A coupling rod from the disconnect engages the separate operating handle assembly mounted on the door. A built-in adjustment in the coupling compensates for errors in rod length or cabinet depth of plus or minus ¼-inch.

Check No. 26 on Reply Card for more Details

SMALL DRILL: Designated as 9DBW-28A, a new heavy duty, air operated, small drill is made by Cleco Division, Reed Roller Bit Co., Houston, Tex. Features include stub tooth gear train, built-in lubricator, a sealed spindle bearing and a chuck guard for safety.

Check No. 27 on Reply Card for more Details

DISK TYPE THERMOSTAT: Thermostat C4391, developed by Spencer Thermostat, Division of Metals & Controls Corp., Attleboro, Mass., is snap action, disk type and is hermetically sealed with terminals brought out through glass seals and with rubber bonded over terminals and to rubber covered leads. Switch action may be either single or double throw, single pole.

Check No. 28 on Reply Card for more Details

EXPENDABLE PALLET: A new type of pallet, offered by Mead Board Sales Inc., Cincinnati 9, O., is made of the sturdiest type of the company's chestnut fiber board, has solid smooth deck and has wood supports or legs.

Check No. 29 on Reply Card for more Details

POCKET-SIZE pH METER: Completely self-contained with batteries in a bakelite case 3 x 5⅞ x 2½ inches, is the new pH meter and companion probe unit developed by Analytical Measurements Inc., Chatham, N. J. Suppliers and beakers are eliminated by combining the calomel and glass electrodes with the sample holder in a single polyethylene probe unit. Meter is scaled from 2 to 12 pH for easy reading. One-knob control and continuous reading features of this instrument simplify operation for untrained personnel.

Check No. 30 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Helpful Literature

73. Press Brakes

Airtherm Mfg. Co., Machinery Div. —Illustrated bulletin No. 906 covers 1500 and 2000 series Metalworker all-steel, power press brakes. Brakes are designed for heavy sheet metal and light plate work.

74. Engine & Tool Room Lathes

Cincinnati Lathe & Tool Co.—24-page illustrated catalog No. T-101 is descriptive of light-duty Tray-Top lathes covering engine, tool room and gap bed models. Such important features as quick conversion from English to metric thread chasing are described, and step-by-step procedure is given.

75. Cutting Lubricants

Macco Products Co.—8-page illustrated reprint "Which Coolant?" tells effective way to test cutting lubricants by formula based on weighing tool wear. Tests conducted in Cleveland plant show varying amounts of wear are caused by different types of coolants.

76. Electric Cable Hoists

Ohio Hoist & Mfg. Co.—6-page illustrated catalog L-3988 is descriptive of Bob-Cat heavy-duty electric cable hoists. It gives detailed specifications on 1 to 5-ton models and lists lifting capacities, heights, lifting speeds, weights and overall dimensions.

77. Fabrication Facilities

A. L. Smith Iron Co.—4-page illustrated folder describes company's facilities and specialized abilities in fabrication of metal and assembly of electrical components. Production can be as either prime or subcontractor on items with or without electrical wiring.

78. Handling Equipment

Clark Equipment Co., Industrial Truck Div.—24-page illustrated magazine "Material Handling News" describes materials handling equipment, including electric battery-powered fork-lift trucks, powered hand pallet trucks and Electro-Lift and Hydro-Lift hand trucks. Dynatork clutchless drive and attachments are covered.

79. Broaching Machine

Lapointe Machine Tool Co.—6-page illustrated HP bulletin on Lapointe horizontal broaching machine discusses its salient features, including ample capacity sealed reservoir, large chip chutes, convenient pushbutton station and adaptability for surface and internal broaching. Eight sizes ranging from 2½ to 50-ton capacity and 30 to 78-in. stroke are offered

80. Industrial Brushes

Pittsburgh Plate Glass Co., Brush Div.—32-page illustrated brochure "12 Examples how Pittsburgh Industrial Brushes Save Industry Money" tells how company solved such brushing problems as cleaning welds, finishing stainless steel sheets, removing sand from hot cast iron, putting satin finish on brass and removing oil films.

81. Casters & Wheels

Divine Brothers Co.—42-page illustrated catalog No. 25 provides information on truck casters and industrial truck wheels made in variety of sizes and styles with five types of bearings and 13 types of wheels. Selection information, detailed specifications and ordering data also are included.

82. Industrial Instruments

Industrial Electronics, Inc.—2-page illustrated bulletin T-128-B gives specifications on Uni-Bridge electronic instrument which features universal bridge control, direct reading precision meter, integral direct current power supply, low hum level, and balancing and calibrating circuit.

83. Mill Motors

Elliott Co., Crocker-Wheeler Div.—4-page illustrated bulletin SL620-1A is descriptive of line of direct current mill motors for heavy duty mill and crane service. Construction features are explained and shown with sectional drawing.

84. V-Belt Drives

Pyott Foundry & Machine Co.—16-page illustrated catalog No. V-700 contains complete dimensional and application data on Vee-Tex drives which employ standard or Que-Dee sheaves and Goodrich Vee-Tex V-belts. Que-Dee sheaves have Taper-Tight bushings which speed installation and servicing and assure tight fit on shaft.

85. Blast Cleaning Castings

Pangborn Corp.—4-page illustrated bulletin No. 219 tells and shows how Rotoblast "Turn-style Table" for airless blast cleaning of castings saves labor and money by cleaning in one section while other section is being loaded. Machine cleans by centrifugally throwing abrasive particles from vanes of high-speed rotating wheels against part being cleaned.

FOR MORE INFORMATION USE ONE OF THESE CARDS . .

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86. Precision Drill Press

Hamilton Tool Co.—4-page illustrated bulletin MJ-47 lists specifications of supersensitive drilling machines which have capacities of 0.004 to 5/16-in. in all drillable materials. Spindles speeds from 1500 to 8750 rpm are available with standard drives.

87. Dynamic Balancing Machines

Kurt Orban Co.—6-page illustrated leaflet 65a describes various models of Trebel balancing machines which employ electro-mechanical measuring device or mechanical indicator. Machines are available in capacities for work weighing up to 13,000 lb. Special units for checking balance of fans, crankshafts and drives shafts are covered.

88. Tubing Steels

Babcock & Wilcox Tube Co.—4-page illustrated technical bulletin 12F contains such information as analyses, physical and mechanical properties, creep strength, short time elevated temperature tensile strength and oxidation resistance of 14 popular tubing steels for high temperature and high pressure service. Data are included on carbon, intermediate chrome molybdenum and stainless steels.

89. Industrial Blower

Standard Stoker Co., Inc.—6-page illustrated folder presents dimensional information on Standardaire low, medium and high capacity blowers. Included are engineering layout, typical application data, design data, blower number and ratings in cubic feet per minute at listed revolutions per minute.

90. Oilers

Eynon-Dakin Co. — 8-page illustrated catalog B-3 presents engineering data on oilers, vents, caps and special tube forms. Information on sizes, styles and materials is included.

91. Pumps & Heat Exchangers

Nukem Products Corp.—4-page illustrated bulletin "Nu-Kast Pumps, Heat Exchangers and Floor Drains" deals with acid and alkali resistant equipment for use in industrial and processing plants.

92. Plastic Coatings

Casey & Case coating Co.—12-page bulletin "Corrosion Control Coatings" shows typical applications and outlines advantages obtainable with vinyl base plastic coatings for exteriors and tank linings. Chemical resistance of these inert coatings are listed.

93. Safety Valve

Ross Operating Valve Co.—4-page illustrated bulletin 304 covers new valve which provides operator protection in industrial press and similar operations. Features, installation data and specifications for various sizes are given.

94. Hydraulic Presses

Denison Engineering Co.—8-page illustrated publication "Denison HydrOILic Press" relates applications of company's HydrOILic presses to stamping, riveting and assembly work.

95. Tube-Supported Walls

Bigelow-Liptak Corp.—12-page illustrated catalog on tube-supported walls for industrial boilers describes how walls can be suspended directly from boiler tubes with resulting savings in steel and erection time.

96. Impregnating Process

Metallizing Co. of America—8-page illustrated bulletin "Mogul Cast-Seal Impregnating Process" describes in detail equipment used in process for eliminating casting porosity.

97. Corrosion-Resistant Fittings

Horace T. Potts Co.—8-page illustrated "Speedline Fittings" booklet covers corrosion-resistant fittings and shows how light-walled Schedule 5S corrosion-resistant piping reduces cost of typical piping layout.

98. Carbide Twist Drills

Super Tool Co.—12-page supplement No. 4 to regular catalog No. 50 presents price and dimensional data on solid carbide drills and carbide tipped drills in various spirals. Information on Super Hard drills for hardened steel and core drills also is included, together with set-up instructions, feeds, speeds and lubrication.

99. Flanges & Rings

King Fifth Wheel Co.—20-page illustrated brochure offers design and specification data on flanges, bands and angles, along with considerable general engineering information, such as theoretical weights, standard gages, circumferences and areas of circles and decimal equivalents.

100. Viscosity Measurement

Fischer & Porter Co.—12-page illustrated catalog No. 88 describes Viscorator instruments that provide instantaneous method for determining viscosity values for industrial processes. Featured is Auto-Sampling instrument which has constant differential pressure regulator that provides constant meter sample flow rate regardless of line fluctuations.

FOR MORE INFORMATION USE ONE OF THESE CARDS . .

STEEL Numbers

1	21	41	61	81
2	22	42	62	82
3	23	43	63	83
4	24	44	64	84
5	25	45	65	85
6	26	46	66	86
7	27	47	67	87
8	28	48	68	88
9	29	49	69	89
10	30	50	70	90
11	31	51	71	91
12	32	52	72	92
13	33	53	73	93
14	34	54	74	94
15	35	55	75	95
16	36	56	76	96
17	37	57	77	97
18	38	58	78	98
19	39	59	79	99
20	40	60	80	100

STEEL 4-23-51

Penton Building, Cleveland 13, Ohio

Please send ☐ Literature ☐ Price information ☐ Nearest source of supply on the items circled at the left.

NAME _____ TITLE _____

COMPANY _____

PRODUCTS MANUFACTURED _____

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The Market Outlook

THE STEEL and metalworking industries are going about their supply and procurement jobs as heretofore, pending further details and interpretations of the Controlled Materials Plan, which becomes effective July 1. DO-rated orders are being issued and entered by the mills. Other current regulations are being observed as usual. Actually, under the circumstances, there is no other course to follow, considering the uncertainties attending impending switch from the current loose priorities and allocations system. Meanwhile, speculation mounts as to how current preference tonnages will be meshed into the new distribution plan come third quarter.

DELIVERIES—On some steel products the mills are accepting DO orders for delivery into the second half of the year. On a certain few specialties shipments are still further extended. It is notable, however, that on some major products, sheets in particular, delivery promises are not jumping ahead as rapidly on DO-rated orders as they had been in recent weeks. Even on plates, which are in heavy demand for defense work, some tonnage still can be had for July shipment against DO ratings. Promises on hot-rolled carbon bars, another actively sought defense item, vary considerably, depending upon specifications.

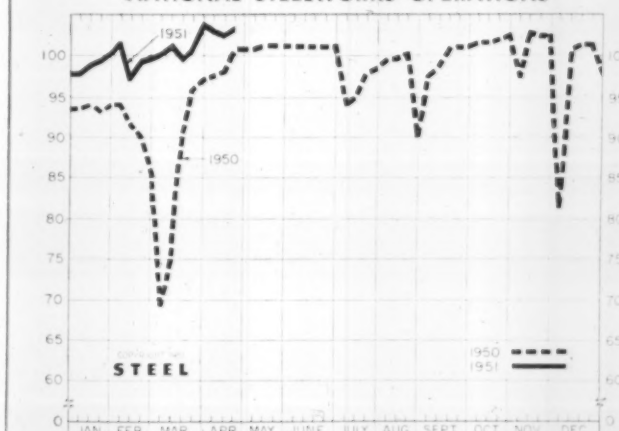
ALLOCATIONS—June defense requirements will show a definite tonnage increase over May volume. Approximately 1.4 million tons will be made available in the month for 24 special programs. In May approximately 1.2 million tons will be provided for 19 programs. Eleven formal directives administered by the NPA Steel Task Committee, including freight cars, locomotives, ship construction, barges and tows, will get about 515,400 tons in June. Overall increase for these programs will run to possibly 40,000 tons.

NEW PROGRAMS—Several new programs are set up for June under special arrangements. These involve 45,000 tons (tin plate) for export through ECA, 25,000 for school construction, 20,000 for mining machinery, 34,000 for petroleum development and depletion equipment, and 16,500 for hospital building. Tonnage for oil country tubular goods will be off slightly to 140,000, but power line needs will be unchanged at 90,000 and heavy power equipment at 95,000. Both these latter now carry DO ratings. Farm machinery requirements run to about 232,000 tons, but this may not represent much increase over May because of hardship allocations scheduled for the latter month.

PRICES—Stability characterizes the iron and steel and related markets under the government price freeze, but changes in schedules are expected. Last week OPS amended its scrap price schedule slightly, clarifying definitions to distinguish between reusable items and scrap, determining applicable prices for certain grades as determined by use, and effecting some changes in certain grade specifications. Price rollbacks also are effected on a number of scrap items. Currently ceiling price regulations are under consideration for the warehouse trade. Proposal is said to call for establishment of individual warehouse price schedules based on product cost, plus percentage warehouse markup, plus mill extras and freight. Mill price schedules also are reported under study, inquiry reportedly centering on extras applying on the various products. It is rumored OPS is considering establishing uniform extras, which, if effected, would result in rollbacks of $8 to $10 per ton for some producers on a number of products.

PRODUCTION—The steel mills are surmounting serious raw material problems, maintaining production at record-breaking pace. National ingot operations rose ½ point last week to 103 per cent of capacity, equivalent to output of 2,059,000 net tons. This compares with average weekly output of 1,281,210 tons in 1940, best prewar production year.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Apr. 21	Change	Same Week 1950	Same Week 1949
Pittsburgh	102	+ 0.5	97.5	98.5
Chicago	106	0*	104.5	101
Mid-Atlantic	100.5	0	93	93
Youngstown	106	+ 2	105	105
Wheeling	97	+ 2.5	104.5	95.5
Cleveland	101.5	0	96	100.5
Buffalo	103	0	104	104
Birmingham	100	0	100	100
New England	91	+ 2	85	80
Cincinnati	105	+ 3	103	106
St. Louis	95	+ 2.5	80	84.5
Detroit	106	+ 2.5	104	111
Western	100.5	+ 6.5	93	97.5
Estimated national rate	103	+ 0.5	100	99

Based on weekly steelmaking capacity of 1,969,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950; 1,843,516 tons for 1949.

* Change from revised rate for preceding week.

The Metalworking Outlook—p. 31 Production-Engineering News—p. 67

Composite Market Averages

	Apr. 19 1951	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)	171.92	171.92	171.92	156.13	111.62
Index in cents per lb.	4.657	4.657	4.657	4.230	3.024
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$106.32	$106.32	$106.32	$93.18	$63.54
No. 2 Fdry, Pig Iron, GT	52.54	52.54	52.54	46.47	26.17
Basic Pig Iron, GT	52.16	52.16	52.16	45.97	25.56
Malleable Pig Iron, GT	53.27	53.27	53.27	47.27	26.79
Steelmaking Scrap, GT	44.00	44.00	44.00	29.50	19.17

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during **5-year base period 1935-39:** **Structural shapes, plates, rails, hot-rolled** and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Apr. 19 1951	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.70	3.70	3.70	3.45	2.50
Bars, H.R., Chicago	3.70	3.70	3.70	3.45	2.50
Bars, H.R., del. Philadelphia	4.20	4.20	4.18	3.93	2.82
Bars, C.F., Pittsburgh	4.55	4.65	4.55	4.10–15	3.10
Shapes, Std., Pittsburgh	3.65	3.65	3.65	3.40	2.35
Shapes, Std., Chicago	3.65	3.65	3.65	3.40	2.35
Shapes, del. Philadelphia	3.91	3.91	3.90	3.46	2.465
Plates, Pittsburgh	3.70	3.70	3.70	3.50	2.50
Plates, Chicago	3.70	3.70	3.70	3.50	2.50
Plates, Coatesville, Pa.	4.15	4.15	4.15	3.60	2.50
Plates, Sparrows Point, Md.	3.70	3.70	3.70	3.50	2.50
Plates, Claymont, Del.	4.15	4.15	4.15	3.60	2.50
Sheets, H.R., Pittsburgh	3.60–75	3.60–75	3.60–75	3.35	2.425
Sheets, H.R., Chicago	3.60	3.60	3.60	3.35	2.425
Sheets, C.R., Pittsburgh	4.35	4.35	4.35	4.10	3.275
Sheets, C.R., Chicago	4.35	4.35	4.35	4.10	3.275
Sheets, C.R., Detroit	4.55	4.55	4.55	4.30	3.375
Sheets, Galv., Pittsburgh	4.80	4.80	4.80	4.40	4.06
Strip, H.R., Pittsburgh	3.75–4.00	3.75–4.00	3.75–4.00	3.25	2.35
Strip, H.R., Chicago	3.50	3.50	3.50	3.25	2.35
Strip, C.R., Pittsburgh	4.65–5.35	4.65–5.35	4.65–5.35	4.15	3.06
Strip, C.R., Chicago	4.90	4.90	4.90	4.30	3.15
Strip, C.R., Detroit	4.35–5.60	4.35–5.60	4.35–5.60	4.35–40	3.15
Wire, Basic, Pittsburgh	4.85–5.10	4.85–5.10	4.85–5.10	4.50	3.06
Nails, Wire, Pittsburgh	5.90–6.20	5.90–6.20	5.90–6.20	5.30	3.25
Tin plate, box, Pittsburgh	$8.70	$8.70	$8.70	$7.50	$5.25

SEMIFINISHED

Billets, forging, Pitts. (NT)	$66.00	$66.00	$66.00	$63.00	$47.00
Wire rods, ½-⅝", Pitts.	4.10–30	4.10–30	4.10–30	3.85	2.30

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$53.00	$47.00	$27.00
Basic, Valley	52.00	52.00	52.00	46.00	26.00
Basic, del. Phila.	56.49	56.49	56.39	49.44	27.84
No. 2 Fdry, Pitts.	52.50	52.50	52.50	46.50	26.50
No. 2 Fdry, Chicago	52.50	52.50	52.50	46.50	26.50
No. 2 Fdry, Valley	52.50	52.50	52.50	46.50	26.50
No. 2 Fdry, Del. Phila.	56.99	56.99	56.89	49.94	28.34
No. 2 Fdry, Birm.	48.88	48.88	48.88	42.38	22.88
No. 2 Fdry (Birm.)del. Cin.	55.33	55.33	55.58	49.08	26.94
Malleable Valley	52.50	52.50	52.50	46.50	26.50
Malleable, Chicago	52.50	52.50	52.50	46.50	26.50
Charcoal, Lyles, Tenn.	66.00	66.00	66.00	60.00	33.00
Ferromanganese, Etna, Pa.	188.00	188.00	188.00	175.00	140.00*

* Delivered, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt. Pitts.	$45.00	$45.00	$45.00	$33.00	$20.00
No. 1 Heavy Melt. E. Pa.	43.50	43.50	43.50	26.00	18.75
No. 1 Heavy Melt. Chicago	43.50	43.50	43.50	29.50	18.75
No. 1 Heavy Melt. Valley	45.00	45.00	45.00	33.75	20.00
No. 1 Heavy Melt. Cleve.	44.00	44.00	44.00	30.25	19.50
No. 1 Heavy Melt. Buffalo	44.00	44.00	44.00	29.75	19.25
Rails, Rerolling, Chicago	52.50	52.50	52.50	46.50	22.25
No. 1 Cast, Chicago	49.00*	49.00*	49.00*	42.50	20.00

* F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn., Connlsvl.	$14.75	$14.75	$14.75	$14.25	$7.50
Beehive, Fdry., Connlsvl.	17.50	17.50	17.50	16.00	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	21.00	13.00

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	19.50	12.00
Zinc, E. St. Louis	17.50	17.50	17.50	11.00	8.25
Lead, St. Louis	16.80	16.80	16.80	10.30	6.35
Tin, New York	112.03	147.00	134.00	77.00	52.00
Aluminum, del.	19.00	19.00	19.00	17.00	15.00
Antimony, Laredo, Tex.	42.00	42.00	42.00	24.50	14.50
Nickel, refinery, duty paid	50.50	50.50	50.50	40.00	35.00

Pig Iron

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$54.00	$54.50	$55.00	$55.50
Brooklyn,N.Y., del.	....	58.96	59.46	....
Newark,del.	56.74	57.24	57.74	58.24
Philadelphia,del.	56.49	56.99	57.49	57.99
Birmingham District				
AlabamaCity,Ala. R2	48.38	48.88	....	....
Birmingham R2	48.38	48.88	....	....
Birmingham S9	48.38	48.88	....	....
Woodward,Ala. W15	48.38	48.88	....	....
Cincinnati,del.	....	55.33	....	....
Buffalo District				
Buffalo R2	52.00	52.50	53.00	....
Buffalo H1	52.00	52.50	53.00	....
Tonawanda,N.Y. W12	52.00	52.50	53.00	....
No.Tonawanda,N.Y. T9	....	52.50	53.00	....
Boston,del.	61.63	62.13	62.63	....
Rochester,N.Y.,del.	54.74	55.24	55.74	....
Syracuse,N.Y.,del.	55.72	56.22	56.72	....
Chicago District				
Chicago I-3	52.00	52.50	52.50	53.00
Gary,Ind. U5	52.00	....	52.50	....
IndianaHarbor,Ind. I-2	52.00	....	52.50	....
So.Chicago,Ill. W14	52.00	52.50	52.50	....
So.Chicago,Ill. Y1	52.00	52.50	52.50	....
So.Chicago,Ill. U5	52.00	....	52.50	53.00
Milwaukee,del.	53.97	54.47	54.47	54.97
Muskegon,Mich.,del.	....	58.20	58.20	....
Cleveland District				
Cleveland A7	52.00	52.50	52.50	53.00
Cleveland R2	52.00	52.50	52.50	....
Akron, del. from Cleve.	54.49	54.99	54.99	55.49
Lorain,O. N3	52.00	....	....	53.00
Duluth I-3	....	....	52.50	....
Erie,Pa. I-3	52.00	52.50	52.50	53.00
Everett,Mass. E1	....	51.75	52.25	....
Fontana,Calif. K1	58.00	58.50	....	....
Geneva,Utah G1	52.00	52.50	....	....
Seattle,Tacoma,Wash.,del.	....	60.35	....	....
Portland,Oreg.,del.	....	60.35	....	....
LosAngeles,SanFrancisco,del.	59.85	60.35	....	....
GraniteCity,Ill. G4	53.90	54.40	54.90	....
St.Louis,del. (inc. tax)	54.66	55.16	55.66	....
Ironton,Utah C11	52.00	52.50	....	....
LoneStar,Tex. L6	48.00	*48.50	48.50	....
Minnequa,Colo. C10	54.00	55.00	55.00	....
Pittsburgh District				
NevilleIsland,Pa. P6	....	52.50	52.50	53.00
Pitts.,N.&S. sides, Ambridge, Aliquippa,del.	....	53.74	53.74	54.24
McKeesRocks,del.	....	53.49	53.49	53.99
Lawrenceville, Homestead, McKeesport,Monaca,del.	....	54.00	54.00	54.50
Verona,del.	....	54.48	54.48	54.98
Brackenridge,del.	....	54.72	54.72	55.22
Bessemer,Pa. U5	52.00	....	52.50	53.00
Clairton,Rankin,So.Duquesne,Pa. U5	52.00	....	....	....
McKeesport,Pa. N3	52.00	....	....	53.00
Monessen,Pa. P7	54.00	....	....	....
Sharpsville,Pa. S6	....	....	52.50	53.00
Steelton,Pa. B2	54.00	54.50	55.00	55.50
Swedeland,Pa. A3	56.00	56.50	57.00	57.50
Toledo,O. I-3	52.00	52.50	52.50	53.00
Cincinnati,del.	57.21	57.71	....	....
Troy,N.Y. R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard,O. Y1	52.00	52.50	52.50	....
Youngstown Y1	52.00	52.50	52.50	....
Youngstown U5	52.00	....	....	53.00
Mansfield,O.,del.	56.43	56.93	56.93	57.43

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.
Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.
Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	$62.50
Buffalo H1	63.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for each 0.045% max. P)

NiagaraFalls,N.Y. P15	$83.00
Keokuk,Iowa, Openhearth & Fdry. frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., O.H. & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$66.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$57.00
Steelton,Pa. B2	60.00
Philadelphia delivered	63.12
Troy,N.Y. R2	60.00

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Apr. 19, 1951; cents per pound except as otherwise noted. Code numbers following mill points indicateproducing company; key on next two pages. Changes shown in italics.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$79.00
Munhall,Pa. U5 .....52.00

INGOTS, Alloy (NT)
Detroit R7 .....$54.00
Fontana,Calif. K1 ....80.00
Houston,Tex. S5 .....62.00
Midland,Pa. C18 .....54.00
Munhall,Pa. U5 .....54.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$56.00
Clairton,Pa. U5 .....56.00
Ensley,Ala. T2 .....56.00
Fairfield,Ala. T2 .....56.00
Fontana,Calif. K1 ....75.00
Gary,Ind. U5 .....56.00
Johnstown,Pa. B2 .....56.00
Lackawanna,N.Y. B2 ..56.00
Munhall,Pa. U5 .....56.00
So.Chicago,Ill. U5 ....56.00
So.Duquesne,Pa. U5 ..56.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$66.00
Buffalo R2 .....66.00
Canton,O. R2 .....66.00
Clairton,Pa. U5 .....66.00
Cleveland R2 .....66.00
Conshohocken,Pa. A3 ..75.00
Detroit R7 .....69.00
Ensley,Ala. T2 .....66.00
Fairfield,Ala. T2 .....66.00
Fontana,Calif. K1 ....85.00
Gary,Ind. U5 .....66.00
Geneva,Utah G1 .....66.00
Houston,Tex. S5 .....74.00
Johnstown,Pa. B2 .....66.00
Lackawanna,N.Y. B2..66.00
LosAngeles B3 .....85.00
Munhall,Pa. U5 .....66.00
Seattle B3 .....85.00
So.Chicago R2, U5, W14.66.00
So.Duquesne,Pa. U5 ..66.00
So.SanFrancisco B3 ..85.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$70.00
Buffalo R2 .....70.00
Canton,O. R2 .....70.00
Canton,O.(29) T7 ....66.00
Conshohocken,Pa. A3 ..77.00
Detroit R7 .....73.00
Fontana,Calif. K1 ....89.00
Gary,Ind. U5 .....70.00
Houston,Tex. S5 .....78.00
Ind.Harbor,Ind. Y1 ...70.00
Johnstown,Pa. B2 .....70.00
Lackawanna,N.Y. B2..70.00
LosAngeles B3 .....90.00
Massillon,O. R2 .....70.00
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....70.00
So.Chicago R2,U5,W14.70.00
So.Duquesne,Pa. U5 ...70.00
Struthers,O. Y1 .....70.00
Warren,O. C17 .....70.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 .....$82.00
Cleveland R2 .....82.00
Fontana,Calif. K1 ...103.00
Gary,Ind. U5 .....82.00
Massillon,O. R2 .....82.00
So.Chicago,Ill. R2 ....82.00
So.Duquesne,Pa. U5 ...82.00

SHEET BARS (NT)
Fontana,Calif. K1 ...$89.00

SKELP
Aliquippa,Pa. J5 .....3.45
Munhall,Pa. U5 .....3.35
Warren,O. R2 .....3.35
Youngstown R2, U5 ...3.35

WIRE RODS
AlabamaCity,Ala. R2 ..4.10
Buffalo W12 .....4.10
Cleveland A7 .....4.10
Donora,Pa. A7 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 ....4.90
Houston,Tex. S5 .....4.50
Johnstown,Pa. B2 .....4.10
Joliet,Ill. A7 .....4.10
LosAngeles B3 .....4.90
Minnequa,Colo. C10 ....4.35
Monessen,Pa. P7 .....4.30
No.Tonawanda,N.Y. B11 4.10
Pittsburg,Calif. C11 ....4.75
Portsmouth,O. P12 ....4.30
Roebling,N.J. R5 .....4.20
So.Chicago,Ill. R2 .....4.10
SparrowsPoint,Md. B2 ..4.20
Sterling,Ill.(1) N15 ....4.10
Struthers,O. Y1 .....4.10
Torrance,Calif. C11 ...4.90
Worcester A7 .....4.40

PLATES, Wrought Iron
Economy,Pa. B14 .....8.60

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.60
Aliquippa,Pa. J5 .....3.65
Bessemer,Ala. T2 .....3.65
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fairfield,Ala. T2 .....3.65
Fontana,Calif. K1 ....4.25
Gary,Ind. U5 .....3.65
Geneva,Utah G1 .....3.65
Houston,Tex. S5 .....4.05
Ind.Harbor,Ind. I-2 ....3.65
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 ....4.25
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.25
Minnequa,Colo. C10 ....4.10
Munhall,Pa. U5 .....3.65
Niles,Calif.(22) P1 ....4.85
Phoenixville,Pa. P4 ....4.95
Portland,Oreg. O4 .....4.50
Seattle B3 .....4.30
So.Chicago,Ill. U5, W14.3.65
So.SanFrancisco B3 ....4.20
Torrance,Calif. C11 ....4.25
Weirton,W.Va. W6 .....3.90

Alloy Stand. Shapes
Clairton,Pa. U5 .....4.35
Fontana,Calif. K1 ....5.55
Munhall,Pa. U5 .....4.35
So.Chicago,Ill. U5 .....4.35

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.50
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa.(14) B2 ..5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.10
Gary,Ind. U5 .....5.50
Geneva,Utah G1 .....5.50
Ind.Harbor,Ind. I-2 ....5.50
Ind.Harbor,Ind. Y1 ....6.00
Johnstown,Pa. B2 .....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 .....6.05
Munhall,Pa. U5 .....5.50
Seattle B3 .....6.10
So.Chicago,Ill. U5 .....5.50
So.SanFrancisco B3 ....6.00
Struthers,O. Y1 .....6.00

Wide Flange
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fontana,Calif. K1 .....4.65
Lackawanna,N.Y. B2 ...3.70
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....5.50
Lackawanna,N.Y. B2 ...5.50
Munhall,Pa. U5 .....5.45
So.Chicago,Ill. U5 .....5.45

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....4.45
Lackawanna,N.Y. B2 ...4.45
Munhall,Pa. U5 .....4.45
So.Chicago,Ill. U5 .....4.45

BEARING PILES
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.65
Bessemer,Ala. T2 .....5.65
Clairton,Pa. U5 .....5.65
Cleveland J5, R2 .....5.65
Conshohocken,Pa. A3 ..5.90
Fairfield,Ala. T2 .....5.65
Fontana,Calif.(30) K1 ..6.25
Gary,Ind. U5 .....5.65
Geneva,Utah G1 .....5.65
Ind.Harbor,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 ....6.15
Johnstown,Pa. B2 .....5.65
Munhall,Pa. U5 .....5.65
Pittsburgh J5 .....5.65
Seattle B3 .....6.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 .....5.65
Youngstown Y1 .....6.15

PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....4.85
Coatesville,Pa. L7 .....5.25
Conshohocken,Pa. A3 ..5.05
Fontana,Calif. K1 .....5.70
Gary,Ind. U5 .....4.75
Johnstown,Pa. B2 .....4.75
Munhall,Pa. U5 .....4.75
Sharon,Pa. S3 .....5.20
So.Chicago,Ill. U5 .....4.75
SparrowsPoint,Md. B2 ..4.75

FLOOR PLATES
Cleveland J5 .....4.75
Conshohocken,Pa. A3 ..4.75
Harrisburg,Pa. C5 .....5.95
Ind.Harbor,Ind. I-2 ....4.75
Munhall,Pa. U5 .....4.75
So.Chicago,Ill. U5 .....4.75

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Ashland,Ky(15) A10 ..3.70
Bessemer,Ala. T2 .....3.70
Clairton,Pa. U5 .....3.70
Claymont,Del. C22 .....4.15
Cleveland J5, R2 .....3.70
Coatesville,Pa. L7 .....4.15
Conshohocken,Pa. A3 ..4.15
Fairfield,Ala. T2 .....3.70
Fontana,Calif.(30) K1 ..4.30
Gary,Ind. U5 .....3.70
GraniteCity,Ill. G4 ....4.40
Geneva,Utah G1 .....3.70
Harrisburg,Pa. C5 .....4.95
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ...3.70
Minnequa,Colo. C10 ....4.50
Munhall,Pa. U5 .....3.70
Pittsburgh J5 .....3.70
Seattle B3 .....4.60
Sharon,Pa. S3 .....3.95
So.Chicago,Ill. U5, W14.3.70
SparrowsPoint,Md. B2..3.70
Steubenville,O. W10 ....3.70
Warren,O. R2 .....3.70
Weirton,W.Va. W6 ....4.00
Youngstown R2, U5, Y1.3.70

PLATES, Carbon A. R.
Fontana,Calif. K1 ....5.45
Geneva,Utah G1 .....4.85

PLATES, Ingot Iron
Ashland,c.l.(15) A10 ...3.95
Ashland,lcl.(15) A10 ...4.45
Cleveland,c.l. R2 .....4.30
Warren,O. c.l. R2 .....4.30

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Alton,Ill(1) L1 .....3.95
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....3.70
Buffalo R2 .....3.70
Canton,O. R2 .....3.70
Clairton,Pa. U5 .....3.70
Cleveland R2 .....3.70
Detroit R7 .....3.85
Emeryville,Calif. J7 ...4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 ....4.40
Gary,Ind. U5 .....3.70
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.20
Minnequa,Colo. C10 ....4.15
Niles,Calif. P1 .....5.05
N.Tonawanda,N.Y. B11.3.70
Pittsburg,Calif. C11 ...4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.45
So.Chicago R2, U5, W14.3.70
So.Duquesne,Pa. U5 ...3.70
So.SanFran.,Cal. B3 ...4.45
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ...4.40
Weirton,W.Va. W6 ....3.85
Youngstown R2, U5 ...3.70

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 .....3.70
Atlanta A11 .....4.25
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ...3.70
Niles,Calif. P1 .....5.05
Portland,Oreg. O4 .....4.65
SanFrancisco S7 .....4.85

BAR SIZE ANGLES; H.R. CARBON
Bethlehem,Pa. B2 .....3.90

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.30
Buffalo R2 .....4.30
Canton,O. R2 .....4.30
Canton,O.(29) T7 .....3.95
Clairton,Pa. U5 .....4.30
Detroit R7 .....4.45
Ecorse,Mich. G5 .....4.65
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....4.30
Houston,Tex. S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.30
Midland,Pa. C18 .....4.30
So.Chicago R2, U5, W14 4.30
So.Duquesne,Pa. U5 ...4.30
Struthers,O. Y1 .....4.30
Warren,O. C17 .....4.30
Youngstown U5 .....4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.55
Gary,Ind. U5 .....4.55
Youngstown U5 .....4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.55
Bessemer,Ala. T2 .....5.55
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.55
Cleveland R2 .....5.55
Fairfield,Ala. T2 .....5.55
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.55
Ind.Harbor,Ind. I-2 ....5.55
IndianaHarbor,Ind. Y1..6.05
Johnstown,Pa. B2 .....5.55
Lackawanna,N.Y. B2 ...5.55
LosAngeles B3 .....6.25
Pittsburgh J5 .....5.55
Seattle B3 .....6.30
So.Duquesne,Pa. U5 ...5.55
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.05
Youngstown U5 .....5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....4.55
BeaverFalls,Pa.M12,R2 ..4.55
Buffalo B5 .....4.60
Camden,N.J. P13 .....5.00
Carnegie,Pa. C12 .....4.55
Chicago W18 .....4.55
Cleveland A7, C20 .....4.55
Detroit P17 .....4.70
Donora,Pa. A7 .....4.55
Elyria,O. W8 .....4.55
FranklinPark,Ill. N5 ....4.55
Gary,Ind. R2 .....4.55
GreenBay,Wis. F7 .....4.55
Hammond,Ind. I.2, M13..4.55
Hartford,Conn. R2 .....5.10
Harvey,Ill. B5 .....4.55
LosAngeles R2 .....6.00
Mansfield,Mass. B5 .....5.10
Massillon,O. R2, R8 ....4.55
Monaca,Pa. S17 .....4.55
Newark,N.J. W18 .....5.00
Plymouth,Mich. P5 .....4.80
Pittsburgh J5 .....4.55
Putnam,Conn. W18 .....5.10
Readville,Mass. C14 .....5.10
St.Louis,Mo. M5 .....4.95
So.Chicago,Ill. W14 .....4.55
SpringCity,Pa.(5) K3 ....5.00
Struthers,O. Y1 .....4.55
Waukegan,Ill. A7 .....4.55
Youngstown F3, Y1 ....4.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....5.40
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa. B2 .....5.40
Buffalo B5 .....5.40
Camden,N.J. P13 .....5.80
Canton,O. R2 .....5.40
Canton,O.(29) T7 .....4.90
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7 .....5.45
Cleveland C20 .....5.40
Detroit P17 .....5.55
Donora,Pa. A7 .....5.45
Elyria,O. W8 .....5.40
Gary,Ind. R2 .....5.40
Hammond,Ind. I.2, M13..5.40
Hartford,Conn. R2 .....5.85
Harvey,Ill. B5 .....5.40
Lackawanna,N.Y. B2 ...5.40
Mansfield,Mass. B5 .....5.85
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.75
Plymouth,Mich. P5 .....5.60
So.Chicago,Ill. R2, W14.5.40
Struthers,O. Y1 .....5.40
Warren,O. C17 .....5.40
Waukegan,Ill. A7 .....5.45
Worcester,Mass. A7 ....5.75
Youngstown F3, Y1 ....5.40

RAIL STEEL BARS
ChicagoHts.(3,4)I-2, C2.4.75
Franklin,Pa.(3, 4) F5 ..4.75
FortWorth,Tex.(26) T4..4.85
Huntngtn,W.Va.(3) W7 ..5.50
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....3.80
Tonawanda(3,4) B12 ....4.75
Williamsport(3) S19 ....5.00
Williamsport(4) S19 ....5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.60
Dover,(Eng.Bolt) U1 ...13.50
Dover(Wrgt.Iron) U1 ...12.25
Economy,Pa(S.R.) B14..9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt)B14 12.20
McK.Rks.(Staybolt) L5..14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.70
Alton,Ill.(6) L1 .....3.70
Atlanta A11 .....4.25
Buffalo R2 .....3.70
Cleveland R2 .....3.70
Emeryville,Calif. J7 ...4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1..3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ...3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.20
Minnequa,Colo. C10 ....4.50
Niles,Calif. P1 .....5.05
Pittsburg,Calif. C11 ...4.40
Portland,Oreg. O4 .....4.65
SandSprings,Okla. S5 ..4.60
Seattle B3, N14 .....4.45
So.Chicago,Ill. R2 .....3.70
So.Duquesne,Pa. U5 ...3.70
So.San Francisco B3 ....4.45
SparrowsPoint,Md. B2 ..3.70
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Youngstown R2, U5 ...3.70

BARS, Reinforcing (Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ...4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.00
Seattle B3, N14 .....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt, ¼-1" B2..4.75
Williamsport,Pa. S19 ...5.10

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.60
Asland,Ky.(8) A10 .....3.60
Butler,Pa. A10 .....3.60
Cleveland J5, R2 .....3.60
Conshohocken,Pa. A3 ..4.00
Detroit M1 .....4.40
Ecorse,Mich.(8) G5 ....3.80
Fairfield,Ala. T2 .....3.60
Fontana,Calif. K1 .....4.55
Gary,Ind. U5 .....3.60
Geneva,Utah G1 .....3.70
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1..3.60
Irvin,Pa. U5 .....3.60
Lackawanna,N.Y. B2 ...3.60
Munhall,Pa. U5 .....3.60
Niles,O. N12 .....5.25
Pittsburg,Calif. C11 ....4.30
Pittsburgh J5 .....3.60
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 ....3.60
SparrowsPoint,Md. B2 ..3.60
Steubenville,O. W10 ....3.60
Torrance,Calif. C11 ....4.30
Warren,O. R2 .....3.60
Weirton,W.Va. W6 ....3.60
WestLeechburg,Pa. A4..3.75
Youngstown U5, Y1 ....3.60

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.75
Dover,O. R1 .....5.65
Ind.Harbor,Ind. I-2 ....5.40
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 ....5.40

SHEETS, H.R. (14-ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 .....5.40
Conshohocken,Pa. A3 ..5.65
Ecorse,Mich. G5 .....5.95
Fairfield,Ala. T2 .....5.40
Fontana,Calif. K1 .....6.35
Gary,Ind. U5 .....5.40
Ind.Harbor,Ind. I-2 ....5.40
IndianaHarbor,Ind. Y1..5.90
Irvin,Pa. U5 .....5.40
Lackawanna(35) B2 ....5.40
Pittsburgh J5 .....5.40
Sharon,Pa. S3 .....5.40
So.Chicago,Ill. U5 .....5.40
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 .....5.40
Weirton,W.Va. W6 ....5.75
Youngstown U5 .....5.40
Youngstown Y1 .....5.90

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 .....6.55
Ecorse,Mich. G5 .....7.10
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.55
IndianaHarbor,Ind. Y1 ..7.05
IndianaHarbor,Ind. I-2..6.55
Irvin,Pa. U5 .....6.55
Lackawanna(37) B2 ....6.55
Pittsburgh J5 .....6.55
SparrowsPoint(38) B2 ..6.55
Warren,O. R2 .....6.55
Weirton,W.Va. W6 ....6.90
Youngstown Y1 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.35
Cleveland J5, R2	4.35
Ecorse,Mich. G5	4.55
Fairfield,Ala. T2	4.35
Follansbee,W.Va. F4	5.35
Fontana, Calif. K1	5.30
Gary,Ind. U5	4.35
GraniteCity,Ill. G4	5.05
Ind.Harbor,Ind. I-2, Y1	4.35
Irvin,Pa. U5	4.35
Lackawanna,N.Y. B2	4.35
Middletown,O. A10	4.35
Pittsburg,Calif. C11	5.30
Pittsburgh J5	4.35
SparrowsPoint,Md. B2	4.35
Steubenville,O. W10	4.35
Warren,O. R2	4.35
Weirton,W.Va. W6	4.35
Youngstown Y1	4.35

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.80
Ashland,Ky.(8) A10	4.80
Canton,O. R2	4.80
Dover,O. R1	5.50
Fairfield,Ala. T2	4.80
Gary,Ind. U5	4.80
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	4.80
Irvin,Pa. U5	4.80
Kokomo,Ind.(13) C16	5.20
MartinsFerry,O. W10	4.80
Niles,O. N12	6.00
Pittsburg,Calif. C11	5.55
SparrowsPoint,Md. B2	4.80
Steubenville,O. W10	4.80
Torrance,Calif. C11	5.55
Weirton,W.Va. W6	4.80

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.20
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	5.35
Irvin,Pa. U5	5.35
Kokomo,Ind.(13) C16	5.75
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.05
Middletown,O. A10	5.05

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.65
Niles,O. R2 (28)	5.65
Weirton,W.Va. W6	5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.70

SHEETS, Drum Body

Pittsburg,Calif. C11	4.30
Torrance,Calif. C11	4.30

SHEETS, Well Casing

Fontana,Calif. K1	5.10
Torrance,Calif. C11	5.10

BLUED Stock, 29 Ga.

Yorkville,O. W10	6.80
Follansbee,W.Va.(23)F4	6.85

ROOFING SHORT TERNES (8 lb. coated)

Gary,Ind. U5	9.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.60
Gary,Ind. U5	7.50
Irvin,Pa. U5	7.50
SparrowsPoint,Md. B2	7.60
Yorkville,O. W10	7.50

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.40

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.50
Yorkville,O. W10	9.50

SHEETS, LONG Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	5.20
Gary,Ind. U5	5.20
Mansfield,O. E6	6.05
Middletown,O. A10	5.20
Niles,O. N12	6.00
Weirton,W.Va. W6	5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.60

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.65
Cleveland R2	4.65
Gary,Ind. U5	4.65
GraniteCity,Ill. G4	5.35
Ind.Harbor,Ind. I-2	4.65
Irvin,Pa. U5	4.65
Middletown,O. A10	4.65
Youngstown Y1	4.65

SHEETS, Culvert No. 16	Cu Alloy	Cu Fe
Ashland A10	5.60	...
Canton,O. R2	5.65	6.10
Fairfield,Ala. T2	5.60	5.85
Gary, U5	5.60	5.85
IndianaHarbor I-2	5.60	5.85
Irvin,Pa. U5	5.60	5.85
Kokomo C16	6.25	...
MartinsFy.O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	5.85
Fairfield,Ala. T2	5.85

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.85
Cleveland R2	4.20
Ind.Harbor,Ind. I-2	3.85
Warren,O. R2	4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.95
Middletown,O. A10	4.85
Warren,O. R2	4.95

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.05
Canton,O. R2	5.55

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.30
Middletown,O. A10	5.30

SHEETS, ALUMINIZED

Butler,Pa. A10	8.15

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.15	$7.40	$7.80
Fairfield,Ala. T2	7.25	7.50	7.90
Gary,Ind. U5	7.15	7.40	7.80
GraniteCity,Ill. G4	7.35	7.60	8.00
Ind.Harbor,Ind. I-2, Y1	7.15	7.40	7.80
Irvin,Pa. U5	7.15	7.40	7.80
Niles,O. R2	7.15	7.40	7.80
Pittsburg,Calif. C11	7.90	8.15	8.55
SparrowsPoint,Md. B2	7.25	7.50	7.90
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill.G4 (cut lengths)	...	...	7.95	9.20	...
Ind.Harbor,Ind. I-2	6.95	7.25	(34)	...	...
Mansfield,O. E6 (cut lengths)	7.10	7.25	7.75	9.00	9.80
Niles,O. N12 (cut lengths)	...	6.75	7.25	...	...
Vandergrift,Pa. U5	...	7.25	7.75	9.00	9.80
Warren,O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville,O. A10	...	7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower) Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	...	...	...
Vandergrift,Pa. U5	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	...	...	...
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	...	...	14.75	15.25
Vandergrift,Pa. U5	12.90	13.75	14.75	15.25

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa J5	$8.45	$8.70
Fairfield,Ala. T2	8.55	8.80
Gary U5	8.45	8.70
Ind.Har, I-2, Y1	8.45	8.70
Irvin,Pa. U5	8.45	8.70
Pitts.,Cal. C11	9.20	9.45
Sp.Pt.Md. B2	8.55	8.80
Warren R2	8.45	8.70
Weirton W6	8.45	8.70
Yorkville,O. W10	8.45	8.70

BLACK PLATE (Base Box)

Aliquippa J5	$6.25
Fairfield,Ala. T2	6.35
Gary,Ind. U5	6.25
GraniteCity,Ill. G4	6.45
Ind.Harbor,Ind. I-2, Y1	6.25
Irvin,Pa. U5	6.25
Niles,O. R2	6.25
Pittsburg,Calif. C11	7.00
SparrowsPoint,Md. B2	6.35
Warren,O. R2	6.25
Weirton,W.Va. W6	6.25
Yorkville,O. W10	6.25

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	5.85
Gary,Ind. U5	5.85
GraniteCity,Ill. G4	6.05
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. U5	5.85
Yorkville,O. W10	6.15

STRIP, Hot-Rolled Alloy

Bridgprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	6.70
Gary,Ind. U5	5.50
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10
Midland,Pa. C18	5.85
NewBritn,Conn.(10) S15	5.45
Sharon,Pa. S8	5.85
Youngstown U5	5.50

STRIP, Hot-Rolled, High-Strength Low-Alloy

Bessemer,Ala. T2	5.30
Conshohocken,Pa. A3	5.55
Ecorse,Mich. G5	5.95
Fairfield,Ala. T2	5.30
Fontana,Calif. K1	6.20
Gary,Ind. U5	5.30
Ind.Harb.,Ind. I-2	5.30
IndianaHarbor,Ind. Y1	5.80
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	6.05
Seattle B3	6.30
Sharon,Pa. S3	5.40
So.SanFrancisco(25) B3	6.05
SparrowsPoint,Md. B2	4.95
Warren,O. R2	5.30
Weirton,W.Va. W6	5.75
Youngstown Y1	5.80
Youngstown U5	5.30

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland J5	6.70
Cleveland A7	6.55
Dover,O. G6	7.30
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.55
Weirton,W.Va. W6	7.20
Youngstown Y1	7.05

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.50
Alton,Ill.(1) L1	3.75
Ashland,Ky.(8) A10	3.50
Atlanta A11	4.05
Bessemer,Ala. T2	3.50
Bridgeprt,Conn.(10) S15	4.00
Buffalo(27) R2	3.50
Butler,Pa. A10	3.50
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	3.90
Detroit M1	4.40
Ecorse,Mich. G5	3.80
Fairfield,Ala. T2	3.50
Fontana,Calif. K1	4.75
Gary,Ind. U5	3.50
Houston,Tex. S5	4.90
Ind.Harbor,Ind. I-2, Y1	3.50
Johnstown,Pa.(25) B2	3.50
KansasCity,Mo.(9) S5	4.10
Lackawanna,N.Y.(32)B2	3.50
LosAngeles B3	4.25
Milton,Pa. B6	4.00
Minnequa,Colo. C10	4.55
NewBritain(10) S15	4.00
NoTonawanda,N.Y. B11	3.50
Pittsburg,Calif. C11	4.25
Riverdale,Ill. A1	3.50
SanFrancisco S7	4.85
Seattle B3, N14	4.50
Sharon,Pa. S3	4.00
So.Chicago,Ill. W14	3.50
SparrowsPoint,Md. B2	3.50
Torrance,Calif. C11	4.25
Warren,O. R2	3.50
Weirton,W.Va. W6	3.60
WestLeechburg,Pa. A4	3.75
Youngstown U5, Y1	3.50

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15	10.75
Carnegie,Pa. S18	10.60
Cleveland A7	10.00
Dover,O. G6	10.50
Fontana,Calif. K1	11.65
Harrison,N.J. C18	10.60
Midland,Pa. C18	10.60

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
Bristol,Conn. W1	...	...	7.70	9.65	...
Carnegie,Pa. S18	...	6.80	7.40	9.35	11.65
Cleveland A7	4.65	6.45	7.40	9.35	11.65
Dearborn,Mich. D3	5.60	7.05	7.65	...	...
Detroit D2	5.60	6.65	7.25	...	...
Dover,O. G6	5.50	6.80	7.40	9.35	11.65
FranklinPark,Ill. T6	5.00	6.60	7.55	9.50	11.80
Harrison,N.J. C18	...	...	7.70	9.65	11.95
Mattapan,Mass. T6	5.50	6.75	7.70	9.65	11.95
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	...
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn. D2	5.85	6.75	7.35	...	...
NewYork W3	...	7.10	7.70	9.65	11.95
Pawtucket,R.I. N8:					
Cleve.-or-Pitts.Base	...	6.80	7.40	9.35	11.65
Worcester,Base	5.85	7.10	7.70	9.65	11.95
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J. R5	...	7.10	7.70	9.65	11.95
Wallingford,Conn. W2	5.85	6.75	7.35	9.30	11.60
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11.65
Worcester,Mass. A7	4.95	6.75	7.70	9.65	11.95
Worcester,Mass. T6	5.50	6.75	7.70	9.65	11.95
Youngstown C8	...	6.80	7.40	9.35	11.65
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
NewYork, W3	...	...	10.30	12.50	15.35
NewBritn,Conn.(10) S15					10.75
Pawtucket,R.I.(11) N8					10.75
Pawtucket,R.I.(12) N8					11.05
Sharon,Pa. S3					10.60
Worcester,Mass. A7					10.30
Youngstown C8					10.60

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Berea,O. C7	5.60
Bridgprt,Conn.(10) S15	5.35
Butler,Pa. A10	4.65
Cleveland A7, J5	4.65
Dearborn,Mich. D3	5.90
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	4.85
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	6.30
FranklinPark,Ill.(40) T6	4.95
Ind.Harbor,Ind. I-2	4.50
Lackawanna,N.Y. B2	4.65
LosAngeles C1	5.40
Mattapan,Mass. T6	5.50
Middletown,O. A10	4.65
NewBritain(10) S15	5.35
NewCastle,Pa. B4	5.35
NewCastle(40) E5	5.25
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.15
Pawtucket,R.I. R3	6.00
Pawtucket,R.I.(21) N8	5.85
Riverdale,Ill.(40) A1	4.90
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.35
SparrowsPoint,Md. B2	4.65
Trenton,N.J. R5	6.00
Wallingford,Conn. W2	5.85
Warren,O.(40) T5	5.25
Warren,O. R2	4.65
Weirton,W.Va. W6	4.65
Youngstown C8 (40)	5.25
Youngstown Y1	4.65

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.25
Weirton,W.Va. W6	4.65
Youngstown C8	5.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
CS Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire

G1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H4 Heppenstall Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones& Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky. (8) A10 ...3.75
Warren,O. R2 .....4.10

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....5.25

TIGHT COOPERAGE HOOP

Atlanta A11 .....4.05
Riverdale,Ill. A1 .....3.90
Sharon,Pa. S3 .....4.15
Youngstown U5 .....3.75

WIRE, Merchant Quality

18 to 8 gage!	An'ld	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	5.95	6.40
Bartonville(19)K4	5.70	6.15
Buffalo W12	4.85	...
Cleveland A7	5.70	6.15
Crawfordsville M8	5.95	6.40
Donora A7	5.70	6.15
Duluth A7	5.70	6.15
Fairfield T2	5.70	6.15
Houston,Tex. S5	6.10	6.55
Johnstown B2	5.70	6.15
Joliet,Ill. A7	5.70	6.15
KansasCy,Mo. S5	6.30	6.75
Kokomo C16	5.80	6.00
LosAngeles B3	6.65	...
Minnequa C10	5.95	6.45
Monessen P7	5.95	6.40
Palmer W12	5.15	...
Pitts.Calif. C11	6.65	6.80
Prtsmth.(18)P12	6.10	6.60
Rankin A7	5.70	6.15
So.Chicago R2	5.70	5.95
So.S.Fran. C10	6.65	7.10
Sparrows Pt. B2	5.80	6.25
Sterling,Ill.(1)N15	5.70	6.15
Struthers,O. Y1	5.70	6.15
Torrance,Cal. C11	6.65	...
Worcester A7	6.00	6.45

WIRE, 16 gage!	An'ld Stone	Galv. Stone
Aliquippa J5	10.15	12.15
Bartonville(1) K4	10.25	11.95
Cleveland A7	10.25	12.15
Crawfrdsvle M8	10.30	12.00
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.25	12.15
Kokomo C16	10.25	11.95
Minnequa C10	10.40	12.40
Palmer,Mass. W12	10.25	12.15
Pitts.Cal. C11	10.60	12.50
Prtsmth.(18) P12	10.55	12.30
SparrowsPt. B2	10.35	12.25
Waukegan A7	10.25	12.15

ROPE WIRE	(A)	(B)
Bartonville,Ill. K4	8.55	8.80
Buffalo W12	8.55	8.80
Cleveland A7	8.55	8.80
Donora,Pa. A7	8.55	8.80
Fostoria,O. S1	8.85	9.10
Johnstown,Pa. B2	8.55	8.80
Monessen,Pa. P16	8.55	8.80
Monessen,Pa. P7	8.80	9.05
NewHaven A7	8.85	8.10
Palmer,Mass. W12	8.85	9.10
Portsmouth,O. P12	8.55	8.80
Roebling,N.J. R5	8.85	9.10
SparrowsPt. B2	8.85	8.90
Struthers,O. Y1	8.55	8.80
Trenton,N.J. A7	8.85	9.10
Waukegan,Ill. A7	8.55	8.80
Worcester J4, T6	8.85	9.10

(A) Plow and Mild Plow.
(B) Improved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ...4.85
Aliquippa,Pa. J5 .....4.85
Atlanta A11 .....5.10
Alton,Ill.(1) L1 .....4.85
Bartonville,Ill.(1) K4 ..4.85
Buffalo W12 .....4.85
Chicago W13 .....5.10
Cleveland A7, C20 ....4.85
Crawfordsville,Ind. M8..5.10
Donora,Pa. A7 .....4.85
Duluth,Pa. A7 .....4.85
Fairfield,Ala. T2 .....4.85
Fostoria,O.(24) S1 ....5.35
Houston S5 .....5.25
Johnstown,Pa. B2 .....4.85
Joliet,Ill. A7 .....4.85
KansasCity,Mo. S5 ....5.45
Kokomo,Ind. C16 .....4.95
LosAngeles B3 .....5.80
Minnequa,Colo. C10 ....5.10
Monessen,Pa. P7 .....5.10
Newark, 6-8ga. I-1....5.50
No. Tonawanda B11 ...4.85
Palmer,Mass. W12 ....5.15
Pittsburg,Calif. C11 ....5.80
Portsmouth,O. P12 ....5.25
Rankin,Pa. A7 .....4.85
So.Chicago,Ill. R2 .....4.85
So.SanFrancisco C10 ...5.80
SparrowsPoint,Md. B2 ..4.95
Sterling,Ill.(1) N15 ...4.85
Struthers,O. Y1 .....4.85
Torrance,Calif. C11 ....5.80
Waukegan,Ill A7 .....4.85
Worcester,Mass. A7, T6.5.15

WIRE, Cold-Rolled Flat

Anderson,Ind. G6 .....6.20
Buffalo W12 .....6.35
Cleveland A7 .....5.85
Crawfordsville,Ind. M8..6.20
Detroit D2 .....6.20
Dover,O. G6 .....6.20
Fostoria,O. S1 .....6.00
Kokomo,Ind. C16 .....5.70
FranklinPark,Ill. T6 ...6.20
Massillon,O. R8 .....5.85
Monessen,Pa. P16 ....5.85
Monessen,Pa. P7 .....6.10
NewHaven,Conn. D2 ...6.50
Pawtucket,R.I.(12) N8..6.85
Trenton,N.J. R5 .....6.15
Worcester A7 .....6.15
Worcester T6 .....6.50
Worcester W12 .....6.65

WIRE, Fine & Weaving(8" Coils)

Bartonville,Ill.(1) K4 ...8.90
Buffalo W12 .....8.90
Chicago W13 .....8.90
Cleveland A7 .....8.90
Crawfordsville,Ind. M8..8.95
Fostoria,O. S1 .....8.90
Johnstown,Pa. B2 .....8.90
Kokomo,Ind. C16 .....8.90
Monessen,Pa. P16 .....8.90
Palmer,Mass. W12 ....9.20
Portsmouth,O. P12 ....8.90
Roebling,N.J. R5 .....9.20
Waukegan,Ill A7 .....8.90
Worcester,Mass. A7, T6.9.20

WIRE, Galv'd ACSR For Cores

Bartonville,Ill. K4 ....8.50
Monessen,Pa. P16 .....8.50
Roebling,N.J. R5 .....8.80
SparrowsPoint,Md. B2..8.60
Johnstown,Pa. B2 .....8.50

WIRE, Tire Bead

Bartonville,Ill.(1) K4 ..10.90
Monessen,Pa. P16 ....11.40
Roebling,N.J. R5 .....11.55

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 .....6.25
Alton,Ill.(1) L1 .....6.25
Bartonville,Ill.(1) K4 ..6.25
Buffalo W12 .....6.25
Cleveland A7 .....6.25
Donora,Pa. A7 .....6.25
Duluth A7 .....6.25
Fostoria,O. S1 .....6.25
Johnstown,Pa. B2 .....6.25
LosAngeles B3 .....7.20
Milbury,Mass.(12) N6 ..8.05
Monessen,Pa. P7, P16..6.25
Palmer,Mass. W12 ....6.55
Pittsburg,Calif. C11 ....7.20
Roebling,N.J. R5 .....6.55
Portsmouth,O. P12 ....6.25
So.Chicago,Ill R2 .....6.25
So.SanFrancisco C10 ...6.85
SparrowsPoint,Md. B2..6.35
Struthers,O. Y1 .....6.25
Trenton,N.J. A7 .....6.55
Waukegan,Ill. A7 .....6.25
Worcester A7, T6, W12..6.55
Worcester,Mass. J4 ....6.75

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....5.90
Alton,Ill.(1) L1 .....5.90
Buffalo W12 .....5.90
Cleveland, A7 .....5.90
Donora,Pa. A7 .....5.90
Duluth A7 .....5.90
Johnstown,Pa. B2 .....5.90
LosAngeles B3 .....6.85
Monessen,Pa. P7, P16 ..5.90
NewHaven,Conn. A7 ...6.20
Palmer,Mass. W12 ....6.20
Pittsburg,Calif. C11 ...7.10
Portsmouth,O. P12 ....5.90
Roebling,N.J. R5 .....6.20
So.Chicago,Ill. R2 .....5.90
SparrowsPoint,Md. B2 ..6.00
Torrance,Calif. C11 ....7.10
Trenton,N.J. A7 .....6.20
Waukegan,Ill. A7 .....5.90
Worcester,Mass. A7 ....6.20

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2 ...126
Ala.City,Ala.,17-18ga.R2 213
Aliquippa,Pa.9-14½ga.J5 130
Atlanta A11 133
Bartonville,Ill.(19) K4 ..130
Crawfordsville,Ind. M8 ..132
Donora,Pa. A7 130
Duluth A7 130
Fairfield,Ala. T2 130
Houston,Tex. S5 138
Johnstown,Pa. B2 130
Johnstown,17ga.,6" B2 ..204
Johnstown,17ga.,4" B2 ..207
Joliet,Ill A7 130
KansasCity,Mo. S5 142
Kokomo,Ind. C16 132
Minnequa,Colo. C10 138
Monessen, Pa. P7 135
Pittsburg,Calif. C11 153
Portsmouth,O.(18) P12 ..137
Rankin,Pa. A7 130
So. Chicago,Ill. R2 126
Sterling,Ill.(1) N15 130

FENCE POSTS Col.

ChicagoHts.,Ill. C2 140
Duluth A7 125
Franklin,Pa. F5 140
Huntington,W.Va. W7 ...140
Johnstown,Pa. B2 140
Marion,O. P11 140
Minnequa,Colo. C10 130
Moline,Ill. R2 136
So.Chicago R2 140
Tonawanda B12 140
Williamsport,Pa. S19 ...150

WIRE, Barbed Col.

AlabamaCity,Ala. R2 ...136
Aliquippa,Pa. J5 140
Atlanta A11 143
Bartonville,Ill.(19) K4 ..143
Crawfordsville M8 145
Donora,Pa. A7 140
Duluth,Minn. A7 140
Fairfield,Ala. T2 140
Houston,Tex. S5 148
Johnstown,Pa. B2 140
Joliet,Ill. A7 140
KansasCity,Mo. S5 152
Kokomo,Ind. C16 142
Minnequa,Colo. C10 146
Monessen,Pa. P7 145
Pittsburg,Calif. C11 160
Portsmouth,O.(18) P12 ..147
Rankin,Pa. A7 140
So.Chicago,Ill. R2 136
So.SanFran.,Calif. C10...160
SparrowsPoint,Md. B2 ..142
Sterling,Ill.(1) N15 140

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2 ...123
Atlanta A11 126
Bartonville,Ill.(19) K4 ..123
Crawfordsville M8 132
Donora,Pa. A7 123
Duluth A7 123
Fairfield,Ala. T2 123
Joliet,Ill. A7 123
KansasCity,Mo. S5 135
Kokomo,Ind. C16 125
Minnequa,Colo. C10 128
Pittsburgh,Calif. C11 ...147
So.Chicago,Ill. R2 123
So.SanFran.,Calif. C10 ..147
SparrowsPoint,Md. B2 ..125
Sterling,Ill.(1) N15 123

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2 ....6.10
Bartonville,Ill.(19) K4..5.95
Crawfordsville, Ind. M8..6.30
Donora,Pa. A7 .....5.95
Duluth A7 .....5.95
Johnstown,Pa. B2 .....5.95
Joliet,Ill. A7 .....5.95
Kokomo,Ind. C16 .....6.05
Minnequa,Colo. C10 ....6.20
Pittsburg,Calif. C11 ....6.90
Portsmouth,O. P12 .....6.25
Rankin,Pa. A7 .....5.95
So.Chicago,Ill. R2 .....6.10
SparrowsPoint,Md. B2 ..6.05
Sterling,Ill.(1) N15 .....5.65
Worcester,Mass. A7 .....6.25

NAILS, Cut (100 lb keg)
To dealers (33)

Conshohocken,Pa. A3...$7.35
Wheeling,W.Va. W10 ...7.15

NAILS & STAPLES, Stock
To dealers & mfrs. (7) **Col.**

AlabamaCity,Ala. R2 ..118
Aliquippa,Pa.(15) J5 ..118
Atlanta A11 121
Bartonville,Ill.(19) K4 ..118
Chicago,Ill. W13 118
Cleveland A9 125
Crawfordsville,Ind. M8 ..122
Donora,Pa. A7 118
Duluth A7 118
Fairfield,Ala. T2 118
Galveston,Tex. D7 126
Houston,Tex. S5 126
Johnstown,Pa. B2 118
Joliet,Ill. A7 118
KansasCity,Mo. S5 130
Kokomo,Ind. C16 120
Minnequa,Colo. C10 123
Monessen,Pa. P7 124
Pittsburg,Calif. C11 137
Portsmouth,O. P12 124
Rankin,Pa. A7 118
So.Chicago,Ill. R2 118
SparrowsPoint,Md. B2 ..120
Sterling,Ill.(1) N15 118
Torrance,Calif. C11 138
Worcester,Mass. A7 124

STANDARD TRACK SPIKES

Ind.Harbor,Ind. 1-2, Y1..6.15
KansasCity,Mo. S5 .....6.40
Lebanon,Pa. B2 .....6.15
Minnequa,Colo. C10 .....6.15
Pittsburgh J5 .....6.15
Seattle B3 .....6.65
So.Chicago,Ill. R2 .....6.15
Struthers,O. Y1 .....6.15
Youngstown R2 .....6.15

TRACK BOLTS (20) Treated

KansasCity,Mo. S5 .....9.85
Lebanon,Pa.(32) B2 .....9.85
Minnequa,Colo. C10 .....9.85
Pittsburgh O3, P14 .....9.85
Seattle B3 .....10.10

TIE PLATES

Fairfield,Ala. T2 .....4.50
Gary,Ind. U5 .....4.50
Ind.Harbor,Ind. 1-2 .....4.50
Lackawanna,N.Y. B2 .....4.50
Minnequa,Colo. C10 .....4.50
Pittsburg,Calif. C11 .....4.65
Seattle B3 .....4.65
Steelton,Pa. B2 .....4.50
Torrance,Calif. C11 .....4.65

JOINT BARS

Bessemer,Pa. U5 .....4.70
Fairfield,Ala. T2 .....4.70
Ind.Harbor,Ind. 1-2 .....4.70
Joliet,Ill. U5 .....4.70
Lackawanna,N.Y. B2 .....4.70
Minnequa,Colo. C10 .....4.70
Steelton,Pa. B2 .....4.70

AXLES

Ind.Harbor,Ind. S18 .....5.60
Johnstown,Pa. B2 .....5.60

RAILS	Std. No. 1	Std. No. 2	All No. 2	TeeRails 60 lb Under
Bessemer,Pa. U5	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. U5	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
Ind.Harbor,Ind. 1-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...(16)+	4.00
Lackawanna B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

TOOL STEEL

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	23.00	13.5W,4Cr,3V	140.00
Extra Carbon	27.00	18W,4Cr,2V,9Co	217.50
Spec. Carbon	32.50	19W,4Cr,2V,7Co	217.50
Oil Hardening	35.00	18.25W,4.25Cr,1V,4.75Co	185.50
Cr Hot Wrk	35.00	20.25W,4.25Cr,1.6V,12.25Co	323.00
Hi-Carbon-Cr	63.50	1.5W,4Cr,1V,8.5Mo	78.50
18W,4Cr,1V	123.50	6.4W,4.5Cr,1.9V,5Mo	87.00
18W,4Cr,2V	138.00	5W,4Cr,3V,6Mo	109.50

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, U4, V2, V3.

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W.Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts.Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield,S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.

U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(14) Also wide flange beams.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(23) 28 Ga. 26" wide.
(24) Deduct 0.20c,finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.60c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Bd. edge or square edge.
(33) To jobbers, deduct 20 cents.
(34) 7.25c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	29.0	1.5	+0.5	+3.5
¼	6.0	0.42	28.5	26.5	23.5	+1.0	+3.0	+6.0
⅜	6.0	0.57	23.5	21.5	18.5	+7.0	+9.0	+12.0
½	8.5	0.85	36.0	34.0	35.0	14.0	12.0	13.0
¾	11.5	1.13	39.0	37.0	38.0	18.0	16.0	17.0
1	17.0	1.68	41.5	39.5	40.5	21.5	19.5	20.5
1¼	23.0	2.28	42.0	44.0	41.0	22.0	24.0	21.0
1½	27.5	2.78	42.5	41.5	41.5	23.0	21.5	22.0
2	37	3.68	43.0	41.0	42.0	23.5	21.5	22.5
2½	58.5	5.82	43.5	41.5	42.5	24.0	22.0	23.0
3	76.5	7.62	43.5	41.5	42.5	24.0	22.0	23.0

Column A: Etna, Pa. N2; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜"; W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜". Following make ½" and larger: Lorain, O., N3; Youngstown R2 and 36¼% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y1; Alton, Ill. (Gary base) L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 3½% on ⅛", plus 2½% on ¼", plus 9% on ⅜"; Sharon, Pa. M6, plus 0.5 on ⅛", 1 point lower on ½", ¾", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 16½% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5 quotes 1 point lower on ¾", 2 points lower on 1", 1½ points lower on 1¼", 2 points lower on 1½" and 2", 1½ points lower on 2½" and 3"; Etna, Pa. N2 and 18½% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	9.5	29.5	9.5
2½	58.5	5.82	32.5	12.5	32.5	12.5
3	76.5	7.62	32.5	12.5	32.5	12.5
3½	92.0	9.20	34.5	14.5	34.5	14.5
4	$1.09	10.89	34.5	14.5	34.5	14.5
5	1.48	14.81	37.0	17.0	37.0	17.0
6	1.92	19.18	37.0	17.0	37.0	17.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6 in.; Lorain, N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	13.45	16.47	15.36	15.36
1¼	13	16.09	19.71	15.61	18.19
1½	13	17.27	21.15	17.25	20.30
1¾	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2¼	13	24.35	29.82	24.50	28.84
2¼	12	26.92	32.97	26.98	31.76
2½	12	29.65	36.32	29.57	34.76
2¾	12	32.11	39.33	31.33	36.84
3	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates—Carbon Base 10%	Plates—Carbon Base 20%	Strip—Cold-Rolled Carbon Base Both Sides	Sheets—Carbon Base 10%	Sheets—Carbon Base 20%	Sheets—Cu Base Both Sides
302	....	....	....	19.75	27.50	77.00
304	25.00	28.00–29.50	....	20.75–24.50	27.50	77.00
309	30.50	35.00	....	....	....	....
310	36.50	41.00	....	....	....	144.00
316	29.50	31.50–34.00	....	26.00	36.50	....
317	34.50	39.00	....	....	....	....
318	38.50	38.00	....	....	....	....
321	26.50	31.00	....	23.00	33.00	111.00
347	27.50	30.50–32.00	....	24.00	33.50	130.00
405	21.25	27.75	....	....	....	....
410	20.75	27.25	....	....	....	....
Nickel	33.25	44.25	41.00	54.00	....	....
Inconel	41.00	53.50	....	....	....	165.00
Monel	34.75	45.75	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. 1-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam. 15
- ⅝-in. & ¾-in. 18.5
- ⅞-in. and larger 17.5

Longer than 6 in.:
- All diams. 14

Lag bolts, all diams.:
- 6 in. and shorter 23
- over 6 in. long 21

Ribbed Necked Carriage 18.5
Blank 34
Plow 34
Step, Elevator, Tap, and Sleigh Shoe 21
Tire bolts 12
Boiler & Fitting-Up bolts 31

NUTS

H.P. & C.P.	Reg.	Heavy
Square:		
½-in. & smaller	15	15
⅝-in. & ⅞-in. .	12	6.5
1-in.-1½-in. ..	9	1
1⅝ in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅞-in.	16.5	6.5
1-in.-1½-in. ..	12	2
1⅝ in. & larger	8.5	2
C.P. Hex.		
½-in. & smaller	26	22
⅝-in. & ⅞-in..	23	17.5
1-in. & 1½-in.	19.5	12
1⅝-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller....	35	28.5
⅝-in. & ⅞-in. ...	29.5	22
1-in.-1½-in.	24	15
1⅝-in. & larger	13	8.5
	Light	
¼-in. & smaller	35	
½-in. to ⅞-in.	28.5	
¾-in. to 1½-in.	26	

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish .....48 & 10
Plated finishes ...31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ⅝-in. & smaller 42
- ¾-in. through 1 in. .. 34

Longer than 6 in.:
- ⅝-in. & smaller 26
- ¾-in. through 1 in. ... 4

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 38
1 in. and smaller diam. x over 6 in. 26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 35
¼-in. diam. & larger.... 16
N.F. thread, all diams... 10

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.85c
⅞-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..List to list-plus-50c.

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95
4,5⅛	40	21.50
3	40	22.61
2½	24,30	23.15
2	24,30	25.36

CARBON

40	100,110	8.03
35	100,110	8.03
30	84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03
14	60,72	8.57
10,12	60	8.84

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.00	36.50	31.25
303...	43.00	40.00	33.75
304...	43.00	38.50	32.75
309...	55.50	54.50	44.25
316...	56.50	58.50	48.75
321...	49.00	48.00	36.75
347...	53.50	52.00	41.25
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Baltimore, Types 301 through 347 sheet, except 309 E2.

Brackenridge, Pa., sheets A4.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502, S18.

Cleveland, strip A7.

Detroit, strip, except Types 309, 321, 416, 420, 501 and 502 M1.

Dunkirk,N.Y., bars, wire A4.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip C18.

McKeesport, Pa., bars, sheets except Type 416 U5.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Pittsburgh, sheets C18.

Reading, Pa., bars and strip, except 55.50c for Type 309 strip and 44.75c for Type 309 bars, C4.

Sharon, Pa., strip, except Types 303, 309, 316, 416, 501 and 502 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.

Washington, Pa., bars, sheets & strip, except Type 309 sheets 56.00c and bars 44.75c, J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 61.50c, strip 63.00c; W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4.

Youngstown, strip, except Types 303, 309, 316, 416, 501 and 502 C8.

COAL CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 30.00-35.00
Toluol, one deg...26.00-33.00
Industrial xylol ..25.00-33.50

Per ton bulk, ovens

Sulphate of ammonia..$32-$45

Cents per pound, ovens

Phenol, 40 (carlots, non-returnable drums) ..17.25
Do., less than carlots..18.00
Do., tank cars 15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge iron ..... Cents
- 98+% Fe, carlots.. 16.00
- Swedish, c.i.f. New York, in bags ...7.40-8.50

Electrolytic Iron:
- Annealed, 99.5% Fe 42.50
- Unannealed, 99 + % Fe 36.50
- Unannealed, 99 + % Fe(minus 325 mesh 58.50

Powder Flakes 48.50

Carbonyl Iron:
- 97.9-99.8%, size 5 to 10 microns..83.00-148.00

Aluminum:
- Carlots, freight allowed 29.50
- Atomized, 500 lb drums, freight allowed 33.50

Brass, 10-ton lots 30.00-33.25

Bronze, 10-ton lots 51.25-60.00

Phosphor-Copper, 10 tons 50.00

Copper:
- Electrolytic 43.25
- Reduced 33.75-37.00

Lead 25.50

Manganese:
- Minus 100-mesh 57.00
- Minus 35 mesh 52.00
- Minus 200 mesh 62.00

Nickel unannealed ... 82.00

Nickel-Silver, 10-ton lots 44.00

Silicon 38.50

Solder (plus cost of metal) 8.50

Stainless Steel, 302 .. 83.00

Tin $1.935

Zinc, 10-ton lots .23.00-30.50

Tungsten: Dollars
- 99%, minus 80 to 200 mesh, freight allowed: 1000 lb and over . 4.00
- Less than 1000 lb .. 4.15

98.8% minus 65 mesh, freight allowed:
- 1000 lb. and over ... 4.15
- less than 1000 lb.... 4.25

Molybdenum:
- 99%, minus 80 to 200 mesh, over 500 lb. 2.85
- 200 to 500 lb..... 3.10
- less than 200 lb .. 3.25

Chromium, electrolytic 99% Cr min. 3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll,fur. .$14.50-15.00
Connellsvll,fdry. .17.00-18.00
New River, foundry...19.50
Wise county, foundry..15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens.$22.75
Everett, Mass., ovens
- New England, del.... 24.50

Chicago, ovens 25.00
- Chicago, del. 24.40

Terre Haute, ovens... 22.50
Milwaukee, ovens.... 23.75
Indianapolis, oven 22.75
- Chicago, del. 26.25
- Cincinnati, del. 25.75
- Detroit, del. 26.71

Ironton, O., ovens 22.50
- Cincinnati, del. 25.12

Painesville, O., ovens. 24.00
- Cleveland, del. 25.75

Erie, Pa., ovens 23.50
Birmingham, ovens .. 20.30
- Birmingham, del. .. 21.69

Philadelphia, ovens ... 22.70
Nevillelsland,Pa.,ovens 23.00
Swedeland, Pa., ovens 22.00
St. Louis, ovens
- St. Louis, del. 25.40

Portsmouth, O., ovens 22.50
- Cincinnati, del. 25.12

Detroit, ovens 24.00
- Detroit, del. 25.00
- Buffalo, del. 26.75
- Flint, del. 26.48
- Pontiac, del. 25.42
- Saginaw, del. 26.81

* Or within $4.15 freight zone from works.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c. Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 29.00c; 88-10-2 (No. 215) 44.50c; 80-10-10 (No. 305) 35.00c; No. 1 yellow (No. 405) 25.50c.

Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c, East St. Louis; high grade 18.85c, delivered.

Lead: Common 16.80c; chemical 16.90c; corroding 16.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c; pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 30.75-32.50c; No. 12 foundry alloy (No. 2 grade) 30.75-31.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 32.75-33.50c; grade 2, 30.00-31.50c; grade 3, 30.00-30.50c; grade 4, 28.50-30.00c. Prices include freight at c.l. rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 142.00.

Antimony: American 99-99.8% and over but not meeting specifications below 42.00c; 99.8% and over carsenic 0.05% max.; other impurities 0.1% max.) 42.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 50.50c; 25-lb pigs, 54.15c; "XX" nickel shot, 54.15c; "F" nickel shot or ingots, for addition to cast iron, 51.00c. Prices include import duty.

Mercury: Open market, spot, large lots, New York, $216-$220 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b., Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.55 del.; special or patented shapes $2.80.

Cobalt: 97.99%, $2.10 per lb for 500 lb (kegs); $2.12 per lb for 100 lb (case); $2.17 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 90.16c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper, 41.62½; yellow brass 37.84; commercial bronze, 95%, 40.99; 90%, 40.55; red brass, 85%, 39.59; 80%, 39.15; best quality, 39.15; nickel silver, 18%, 51.91-52.36; phosphor-bronze grade A, 5%, 60.20-62.82.

Rod: Copper, hot-rolled 36.88; cold-drawn 38.13; yellow brass free cutting, 32.23; commercial bronze, 95%, 40.68; 90%, 40.24; red brass 85%, 39.28; 80%, 38.84.

Seamless Tubing: Copper 41.07; yellow brass 40.85; commercial bronze, 90%, 43.21; red brass, 85% 42.50.

Wire: Yellow brass 38.13; commercial bronze, 95%, 41.28; 90%, 40.84; red brass, 85%, 39.88; 80%, 39.44; best quality brass, 39.44.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 28.67-30.295; l.c.l. 29.17-30.92; 100,000 lb lots 28.545-30.295; weatherproof, f.o.b. eastern mills, c.l. 30.10, l.c.l. 30.18; 100,000 lb lots 29.95; magnet, del., 15,000 lb or more 34.50, l.c.l. 35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— 17S-T4
0.125	52.0	...	...
0.156-0.188	44.0	...	...
0.219-0.313	41.5	...	...
0.375	40.0	46.0	48.0
0.406	40.0	...	...
0.438	40.0	46.0	48.0
0.469	40.0	...	...
0.500	40.0	46.0	48.0
0.531	40.0	...	...
0.563	40.0	...	45.0
0.594	40.0	...	...
0.625	40.0	43.5	45.0
0.688	40.0	...	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	...	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	...	...
1.625	36.5	...	39.5
1.688-2.000	36.5	...	...

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $22.00 per cwt; add 50c cwt 10 sq ft to 140 sq ft. Pipe: Full coils $22.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 24.50c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 23.50-24.50c; over 12-in., 23.50-24.50c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 71.50c. Strip, cold-rolled, 77.50c. Rods and shapes, 67.50c. Plates, 69.50c. Seamless tubes, 100.50c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 57.00c. Strip, cold-rolled 60.00c. Rods and shapes, 55.00c. Plates, 56.00c. Seamless tubes, 90.00c. Shot and blocks, 50.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat untrimmed 37.69c; oval 37.19c. Cast 37.375c, delivered in eastern territory.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 60.8c, under 1000 lb 62.8c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98% ½-oz ball, in 200 lb drums, 1 to 900 lb, 19.00c; 1000 to 19,900 lb, 18.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 29.25c; over 200 lb 28.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 68.50c; 10,000 to 30,000 lb, 69.50c; 3000 to 10,000 lb, 70.50c, 500 to 3000 lb 71.50c; 100 to 500 lb, 73.50c; under 100 lb, 76.50c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 35.00c; 400-lb bbl, 33.00c up to 10,000 lb, 32.50c; over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 47.7c, 10 or more durms, 45.7c, f.o.b. Niagara Falls, N.Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 20,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	23.00	23.00	22.25
Yellow Brass	20.125	19.875	18.75
Commercial Bronze			
95%	21.875	21.625	21.125
90%	21.75	21.50	21.00
Red Brass			
85%	21.50	21.25	20.75
80%	21.375	21.125	20.625
Muntz metal	19.00	18.75	18.25
Nickel, silver, 10%	22.25	22.00	11.125
Phos. bronze, A	24.00	23.75	22.75

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 29.00; No. 2 copper 26.00; light copper 24.50; composition red brass 25.00-25.50; radiators 19.50; heavy yellow brass 19.50.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; refinery brass (60% copper) per dry copper content 20.00.

* Nominal.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 25.50-26.50; No. 2 24.00-25.00; light copper 22.00-22.50; No. 1 composition red brass 22.00-23.00; No. 1 composition turnings 21.00-22.00; mixed brass turnings 13.00; new brass clippings 20.00-21.00; No. 1 brass rod turnings 19.00; light brass 15.00; clean heavy yellow brass 17.50; new brass rod ends 19.50; auto radiators 17.50-18.00; cocks and faucets, 19.00-19.50; brass pipe 20.00-20.50.

Lead: Heavy 16.50-16.75; battery plates 9.50-10.00; linotype and stereotype 17.00; electrotype 15.75-16.00; mixed babbitt 17.00.

Zinc: Old zinc 12.50-13.00; new die cast scrap 12.50-13.00; old die cast scrap 8.25-8.50.

Tin: No. 1 pewter 80.00-85.00; block tin pipe 110.00-120.00; No. 1 babbitt 70.00-75.00.

Aluminum: Clippings 2S 21.50-22.00; old sheets 17.00-17.50; crankcase 17.00-17.50; borings and turnings 15.00.

DAILY PRICE RECORD

1951	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Apr. 17-19	24.50	16.80	17.50	142.00	19.00	42.00	50.50	90.16
Apr. 12-16	24.50	16.80	17.50	147.00	19.00	42.00	50.50	90.16
Apr. 9-11	24.50	16.80	17.50	150.50	19.00	42.00	50.50	90.16
Apr. 6-7	24.50	16.80	17.50	150.00	19.00	42.00	50.50	90.16
Apr. 5	24.50	16.80	17.50	149.875	19.00	42.00	50.50	90.16
Apr. 4	24.50	16.80	17.50	150.00	19.00	42.00	50.50	90.16
Apr. 3	24.50	16.80	17.50	149.50	19.00	42.00	50.50	90.16
Apr. 2	24.50	16.80	17.50	150.50	19.00	42.00	50.50	90.16
Mar. Avg.	24.50	16.80	17.50	145.73	19.00	42.00	50.50	90.16
Feb. Avg.	24.50	16.80	17.50	182.716	19.00	42.00	50.50	90.16
Jan. Avg.	24.50	16.80	17.50	171.798	19.00	35.462	50.50	88.880

NOTE: Copper; Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

The Metal Market

Operations at metalworking plants are seriously hampered by shortages of raw materials, as military demands take an increasingly large portion of available supplies

STRINGENCY of nonferrous metals is forcing curtailment of operations at an increasing number of metalworking plants. Since production of major metals cannot keep pace with expansion in defense requirements, coupled with the fact that reserve supplies are depleted, no early improvement is anticipated. Many months of production in excess of consumption will be required to restore inventories of refineries, fabricators and distributors to normal levels.

The raw materials outlook for the brass mill industry, for instance, is unfavorable. Copper supplies continue to be very tight and present indications are that less copper will be available during the present year than in 1950. The outlook for zinc is equally unpromising. In addition, tin, lead and other raw materials needed by the industry are scarce.

Aluminum cooking utensil manufacturers report difficulties in procuring aluminum for fabrication within the 65 per cent permitted consumption rate. Several have eliminated some of the larger sizes of cooking vessels while others are varying their production schedules to conform with aluminum receipts. Military orders are not being received for mess kits and canteens, mainstay of the industry during World War II when production of aluminum cooking utensils (except pressure canners) was prohibited.

NPA officials say that, if the current military trend continues, the aluminum supply aided by reactivated or new production facilities may not afford relief for cooking vessel production. The agency also is considering issuing an order restricting the use of aluminum foil to the packaging of food and other essential perishables. Use of that item for decorative uses would be prohibited.

Defense rated orders are beginning to exert pressure on the brass mill industry and individual members of that industry are carrying the full percentage of rate orders required under order M-11. At the same time, copper wire and cable mills request NPA to amend order M-11 to increase the percentages of defense rate orders each producer is required to accept. The industry's facilities are being used to extent of only 55 to 60 per cent of capacity. DO orders now in the hands of the industry take only from 11 to 20 per cent of output.

Imports of Metals To Rise

While no substantial increase in metal supplies is expected this year, the government's long-range program for developing greater output of strategic materials abroad is progressing satisfactorily. ECA predicts a vastly accelerated flow of materials to United States stockpile next year as a result of the development program.

The first partial repayment, $200,000 worth of aluminum from Jamaica bauxite project, will be followed later this year by such items as chromium from Turkey, lead and zinc from French Morocco, nickel from New Caledonia. In addition to this development work, ECA also makes direct purchases of strategic materials for the United States stockpile from sources in Marshall Plan countries. Through Mar. 1 of this year, ECA had contracted for direct purchase of $85 million worth of strategic materials.

Anaconda Expands in Canada

Anaconda-American Brass Ltd., Toronto, Ont., will spend $4 million in an expansion of its manufacturing facilities. This will include an extension to its tube mill and a new copper department.

More Cobalt in Offing

Our cobalt supply problem probably will be less critical next year. A multimillion dollar refinery being constructed in Garfield, Utah, is scheduled to be in operation by September. The refinery will have a rated capacity of at least 2 million pounds of cobalt a year and this may be raised to 3 million.

Ores to be processed at the new refinery are being mined at the Forney, Idaho, diggings of the Calera Mining Co., a subsidiary of Howe Sound Co., New York. A mill and concentrator at Forney is virtually complete. Copper concentrates that will also evolve from the Forney operation are to go to the existing Garfield smelter of American Smelting & Refining Co. A. S. & R.'s installation, in turn, will provide sulphuric acid to meet the need of the new cobalt refinery.

Tin Price Drops to $1.42

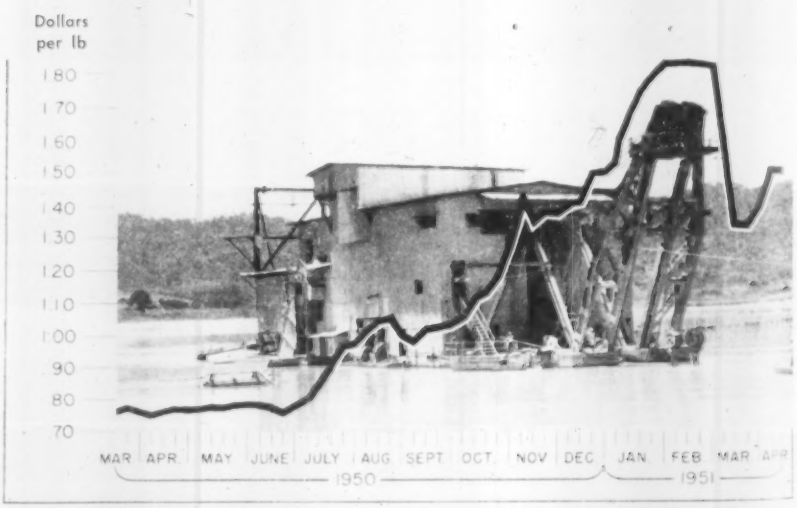
Reconstruction Finance Corp. reduced its selling price for Grade A tin 5 cents a pound on Apr. 17 to $1.42 a pound. This action brought the official price in this country more closely in line with the Far Eastern market. Although the market is well below the peak attained in February, consensus in the trade is that a further reduction in price is sought by the government. However, RFC has not officially proclaimed its policy in this matter. The accompanying chart shows the weekly average prices of Grade A tin for prompt delivery at New York since the RFC stopped selling at a fixed price on Mar. 13, 1950.

Zinc Institute Plans Meeting

New York—Zinc's role in the defense program will be the chief topic of discussion at the annual meeting of the American Zinc Institute to be held in St. Louis, May 21-22. The preliminary program reveals that Dr. Joseph Zimmerman, editor-in-chief, *Daily Metal Reporter*, will discuss the "General Outlook for Metals" while W. W. Hopton, director, Tin, Lead & Zinc Division, NPA, will report on "Zinc and Government Controls." Nelson E. Cook, Wheeling Steel Corp., will forecast "Galvanizing in 1951."

Discussion leaders at Monday afternoon's session will include Otto Herres, chief, Lead-Zinc Branch, Defense Minerals Administration; Edward H. Snyder, Combined Metals Reduction Co.; Russel B. Caples, Anaconda Copper Mining Co. Howard I. Young will preside at this session.

Tin Price Skids from Extreme Boom Levels



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CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, effective Feb. 7, 1951.

STEELMAKING SCRAP COMPOSITE

Apr. 19	$44.00
Apr. 12	44.00
Mar. 1951	44.00
Apr. 1950	29.40
Apr. 1946	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

No. 1 Heavy Melting Steel (Grade 1)

Basing Point	Dealer, Industrial	Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Point, Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 heavy melting steel) for other grades of dealer and industrial scrap.

Open-hearth and Blast Furnace Grades

2. No. 2 Heavy Melting	—$2.00
3. No. 1 Busheling	Base
4. No. 1 Bundles	Base
5. No. 2 Bundles	— 3.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings & Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Electric Furnace and Foundry Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate Scrap	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
20. Foundry Steel, 2 feet and under	+ 2.00
21. Foundry Steel, 1 foot and under	+ 4.00
22. Springs and Crankshafts	— 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00

Special Grades

25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00

Restrictions on Use

(1) Prices for Grades 11, 23 and 24 may be charged only when shipped to a consumer directly from an industrial producer of such grades; otherwise ceiling prices shall not exceed prices established for the corresponding grades of basic open-hearth and blast furnace scrap.

(2) Prices established for Grades 26 and 27 may be charged only when such grades are sold for use for chemical or annealing purposes; otherwise ceiling prices for such grades shall not exceed the price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price for such grade shall not exceed the ceiling price established for the corresponding grade of basic open-hearth.

Special Pricing Provisions

(1) Sellers of Grades 26 and 27 may make an extra charge of $1.50 per ton for loading in box cars, or 75 cents per ton for covering gondola cars with a weather-resistant covering.

(2) Ceiling price of pit scrap, ladle scrap, salamander scrap, skulls, skimmings or scrap recovered from slag dumps and prepared to charging box size, shall be computed by deducting from the price of No. 1 heavy melting steel of dealer and industrial origin, the following amounts: Where iron content is 85% and over, $4; 75% and over, $6; less than 75%, $10.

(3) Ceiling price of any inferior grade of scrap not listed shall not exceed the price of No. 1 heavy melting steel less $15.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap.

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheels	Base
4. Hollow Bored Axles	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel	— 6.00
9. Uncut Frogs, switches	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
22. Uncut Bolsters & Side Frames	Base
23. Cut Bolsters & Side Frames	+ 3.00
24. Angle & Splice Bars	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3 oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00

Restrictions on Use

(1) Price established for Grade 15 may be charged only when purchased and sold for rerolling uses; otherwise, ceiling price for such grade shall not exceed ceiling price established for Grade 14.

(2) Price established for Grade 30 may be charged only when sold to a producer of wrought iron; otherwise, ceiling price for such grade shall not exceed ceiling price established for No. 1 heavy melting steel.

CAST IRON SCRAP

Ceiling price per gross ton for any of the following grades of cast iron scrap shall be the price shown in the following table, f.o.b. shipping point.

1. Cast Iron, No. 1 (Cupola Cast)	$49.00
2. Cast Iron, No. 2 (Charging Box Cast)	47.00
3. Cast Iron, No. 3 (Heavy Breakable Cast)	45.00
4. Cast Iron, No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop Broken Machinery Cast	52.00

Restrictions on Use

(1) Ceiling shipping point or on-line price which a basic open-hearth consumer may pay for No. 1 cast iron, No. 1 wheels, clean auto cast or malleable shall be the ceiling price established for No. 3 cast iron.

(2) Ceiling shipping point or on-line price which any foundry consumer other than a malleable iron producer may pay for Grade 10 shall be the ceiling price established for No. 1 cast iron.

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin which is allocated by the National Production Authority to a consumer, shall be as follows:

(1) For preparing into Grades No. 1, No. 2 or No. 3, $8.
(2) For hydraulically compressing Grade No. 4, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3.
(4) For preparing into Grade No. 25, $6.
(5) For preparing into Grade No. 19, $6.
(6) For preparing into Grade No. 12, Grade No. 13, Grade No. 14, or Grade No. 18, $10.
(7) For preparing into Grade No. 17 or Grade No. 21, $10.
(8) For preparing into Grade No. 16 or Grade No. 20, $10.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be as follows:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.
(3) For preparing into Grade No. 16, $4.
(4) For preparing into Grade No. 17, $5.
(5) For preparing into Grade No. 18, $7.
(6) For preparing into Grade No. 21, $4.
(7) For preparing into Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron shall be limited to the following:

(1) For preparing Grade No. 8 into grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 1, $4.

Whenever scrap has arrived at its point of delivery and the consumer engages a dealer to prepare such scrap, no fee may be charged for such services unless the consumer obtains prior written approval from OPS.

No preparation charge other than the charges set forth above may be made for the preparation of any grade of iron or steel scrap unless the consumer has secured prior written approval of such charges from OPS.

Commissions

No commissions shall be payable except by a consumer to a broker for brokerage services rendered. Where scrap is allocated by NPA other than from a government agency, the seller may designate a broker. Where scrap is allocated by NPA from a governmental agency, the consumer may designate a broker. In the event a broker purchases scrap for sale to a consumer, such consumer may pay such broker a commission not exceeding $1 a ton.

Unprepared Scrap

The term "unprepared scrap" shall not include such demolition projects as bridges, box cars or automobiles, which must be so priced that the prepared scrap will be delivered to the consumer within the established ceiling delivered prices.

For unprepared steel scrap other than materials suitable for hydraulic compression, the ceiling basing point prices shall be $8 per gross ton beneath the established ceiling price of the prepared base grades, No. 1 heavy melting or No. 1 railroad heavy melting steel.

For unprepared material which when compressed constitutes No. 1 bundles the ceiling basing point price shall be $6 per gross ton beneath the ceiling basing point price for No. 1 bundles; or when compressed constitutes No. 2 bundles the ceiling basing point price shall be $8 per ton beneath the ceiling basing point price for No. 2 bundles.

Any iron casting which cannot be broken with an ordinary drop into Grade No. 2 or Grade No. 1 may not be classified as Grade No. 3. Where such iron casting requiring blasting or other special preparation is sold to a consumer of scrap, the shipping point price for Grade No. 3 must be reduced by the amount of the additional charges required for preparation.

Premiums for Alloy Content

No premium may be charged for alloy content except: $1.25 per ton for each 0.25% of nickel where scrap contains not less than 1% and not over 5.25% nickel; $2 per ton for scrap containing not less than 0.15 per cent molybdenum and $3 for scrap containing not less than 0.65% molybdenum; for scrap containing not less than 10% manganese, $4 for scrap in sizes larger than 12 x 24 x 8 in., and $14 for scrap cut in that size or smaller (applicable only if scrap is sold for electric furnace uses or on NPA allocation); $1 for scrap conforming to SAE 52100 when sold for electric furnace use only.

Switching Charges

Switching charges to be deducted from basing point prices of dealer, industrial and nonoperating railroad scrap, to determine ceiling shipping point prices for scrap originating in basing points are per gross ton:

Alabama City, Ala., 43c; Ashland, Ky., 47c; Atlanta, 51c.
Bethlehem, Pa., 52c; Birmingham, 50c; Brackenridge, Pa., 53c; Buffalo, 83c; Butler, Pa., 65c.
Canton, O., 51c; Chicago (including Gary, Ind.), $1.34; Cincinnati (including Newport, Ky.), 65c; Claymont, Del. (including Chester, Pa.), 78c; Cleveland, 76c.
Coatesville, Pa., 56c; Conshohocken, Pa., 20c.
Detroit, 95c; Duluth, Minn., 50c.
Harrisburg, Pa., 51c; Houston, Tex., 57c.
Johnstown, Pa., 75c.
Kansas City, Mo., 78c; Kokomo, Ind., 51c.
Los Angeles (including Firestone switching district), 66c.
Middletown, O., 26c; Midland, Pa., 75c; Minnequa, Colo., 33c; Monessen, Pa., 51c.
Phoenixville, Pa., 51c; Pittsburg, Calif., 65c; Pittsburgh (including Bessemer, Homestead, Duquesne, Munhall), 99c; Portland, Oreg., 52c; Portsmouth, O., 51c.
St. Louis (including Granite City, E. St. Louis, Madison, Ill.), 51c; San Francisco (including So. San Francisco, Niles, Oakland), 66c; Seattle, 59c; Sharon, Pa., 75c; Sparrows Point, Md., 20c; Steubenville, O., 51c.
Warren, Pa., 75c; Weirton, W. Va., 70c.
Youngstown, 75c.

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CLEVELAND, OHIO
1022 Midland Bldg.

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1114 Texas Av. Bldg.

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100 Park Avenue

PITTSBURGH, PA.
Oliver Building

PUEBLO, COLORADO
334 Colorado Bldg.

READING, PENNA.
Luria Building

ST. LOUIS, MISSOURI
2110 Railway Exchange Bldg.

SAN FRANCISCO, CALIFORNIA
Pacific Gas & Elec. Co. Bldg.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Berman

Steel Bars . . .

Bar Prices, Page 151

Pittsburgh—Bar supply here is tightest in many years. DO set-asides and programs account for nearly all the tonnage produced. Hot rolled bars, however, are reported available in some quantity from a few brokers.

Cold finished bars continue to go to defense programs with DO set-asides of 25 per cent. Producers are booked into 1952 in some cases covering defense and defense-support programs. Conversion is on the increase occasioned by some cold-finished users obtaining hot rolled bars through brokers. NPA M-6 amendment giving distributors 85 per cent of their base period receipts comes into full operation in June and will cause producers to cut supply of cold finished available to non-rated customers.

Alloy bars are scarce. None are available for civilian use, all going to defense and defense-support programs.

Boston—Bolt and nut producers in many cases need help in steel procurement if operations are to be maintained. With demand heavy and deliveries lengthening, volume of rated orders is not sufficient for adequate steel tonnage replacements, although considerable is on the defense-use borderline. Antifriction bearing manufacturers are sounding out chances for an allocated monthly program, better than 30,000 tons. Direct buying for government services is heavier, including files and rifle barrel blanks. Bethlehem Steel Co. booked a blank tonnage for Springfield. Civilian allotments for June are down sharply, notably in large sizes and flats in carbon. Alloy substitution of leaner specifications are increasing.

Philadelphia—Hot carbon bars continue in brisk demand, with promises on DO-rated work ranging from August into fourth quarter. Cold-drawn carbon bar promises are even more extended.

Cleveland—Between now and July when the Controlled Materials Plan is scheduled to become effective bar sellers anticipate considerable confusion in scheduling as adjustments are made to fit into the new scheme of distribution. Whether closer balancing of supplies with defense requirements will open up some additional tonnage to the general market later in the year is uncertain, but, in view of the rising military and related requirements for bars, producers think the chances are slim. This is especially true of alloy bars which are in extremely tight supply with producers booked months ahead on defense tonnage.

Chicago—More carbon bar tonnage will go into rated end-use in June due to the farm implement DO-87 priority. This is bad news for civilian consumers whose quotas will shrink correspondingly. First period in which one producer can accept new DO tonnage is the September-October rolling cycle. Cold-finishers estimate 60 to 70 per cent of their business is for defense.

Los Angeles—Columbia Steel Co. blanked out May schedules and other bar producers are blanked out for June or July.

PRICES UNCHANGED

For current quotatoins on refractories ores, and ferroalloys refer to pages 147 and 162, STEEL, Apr. 9, 1951, issue.

Sheets, Strip . . .

Sheet and Strip Prices, Page 151 & 152

Cleveland — Sheetmakers will not know exactly their supply position for last half until details of the Controlled Materials Plan are more fully worked out. This plan of distribution to defense and supporting lines becomes operative July 1. Hope prevails in some areas of the market closer balancing of supplies with defense needs may free some tonnage for the general trade that might otherwise be dormant in idle stocks at defense plants. This, it is emphasized, is only a hope with defense needs expanding steadily, all signs indicating further siphoning off of supplies from the civilian trade.

Producers of sheets and strip will be hard put to fully satisfy warehouse trade requirements under NPA order M-6, revised. This stipulates that the mills ship the distributors up to 85 per cent of their tonnage receipts in the base period. In some flat-rolled items this is going to be very difficult, galvanized sheets, for example. Production of the latter has been severely curtailed over past months by the shortage of zinc. Increased shipments to warehouse distributors, consequently, is only possible through cutting tonnage to other consuming outlets.

Philadelphia—While there is a slight easing in sheets there is still demand for every ton produced. Defense needs have not yet hit light flat products as hard as may later be the case. Moreover, there is some easing in pressure from household appliance manufacturers.

Boston—Soft spots in some consumer hard goods lines have not yet slackened steel demand. Defense orders are mounting. Curtailments in

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York (city)	6.27	7.29	8.44	6.59	...	6.42	7.29	9.25	6.40	6.58	8.04
New York(c'try)	5.97	6.99	8.14	6.29	...	6.12	6.99	8.95	6.10	6.28	7.74
Boston (city)	6.40	7.20	8.49	6.35	...	6.25	7.04	9.25	6.40	6.98	7.88
Boston (c'try)	6.20	7.00	8.29	6.15	...	6.05	6.84	9.05	6.20	6.78	7.68
Phila. (city)	7.15	7.05	8.25	6.35	...	6.30	7.11	8.90	6.15	6.30	7.40
Phila. (c'try)	6.90	6.80	8.00	6.10	...	6.05	6.86	8.65	5.90	6.05	7.15
Balt. (city)	5.80	7.04	8.27	6.24	...	6.24	7.09	...	6.34	6.00	7.64
Balt. (c'try)	5.60	6.84	8.07	6.04	...	6.04	6.89	...	6.14	5.80	7.44
Norfolk, Va.	6.50	...	...	6.70	...	6.55	7.70	...	6.60	6.50	8.00
Richmond, Va.	5.90	...	8.10	6.10	...	6.10	6.90	...	6.30	6.05	7.80
Wash. (w'hse)	6.02	7.26	8.49	6.46	...	6.46	7.26	...	6.56	6.22	7.86
Buffalo (del.)	5.80	6.60	8.29	6.06	...	5.80	6.65	10.65††[5]	6.00	6.25	7.55
Buffalo (w'hse)	5.60	6.40	8.09	5.86	...	5.60	6.45	10.45††[5]	5.80	6.05	7.35
Pitts. (w'hse)	5.60	6.40*	7.75	5.65-5.95	6.90	5.55	6.40	10.10††	5.70	5.75	7.00
Detroit (w'hse)	5.45-5.78	6.53-6.80	7.99	5.94-5.95	7.75	5.84	6.56	8.91	6.09	6.19-6.35	7.28
Cleveland (del.)	5.80	6.60	8.30	5.89	7.10	5.77	6.60-6.70	8.91	10.02	6.12	7.32
Cleve. (w'hse)	5.60	6.40	8.10	5.69	6.90	5.57	6.40-6.50	8.71	5.82	5.92	7.12
Cincin. (city)	6.02	6.59	7.34	5.95	...	5.95	6.51	...	6.24	6.34	7.50
Chicago (city)	5.80	6.60	7.95	5.75	...	5.75	6.50	10.30	5.90	6.00	7.20
Chicago (w'hse)	5.60	6.40	7.75	5.55	...	5.55	6.30	10.10	5.70	5.80	7.00
Milwaukee (city)	5.94	6.74	8.09	5.89	...	5.89	6.74	10.44	6.04	6.14	7.34
Milwau. (c'try)	5.74	6.54	7.89	5.69	...	5.69	6.54	10.24	5.84	5.94	7.14
St. Louis (del.)	6.05	6.85	8.20	6.00	...	6.00	6.85	10.55	6.23	6.33	7.53
St. L. (w'hse)	5.85	6.65	8.00	5.80	...	5.80	6.65	10.35	6.03	6.13	7.33
Kans. City(city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
KansCity(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Omaha, Nebr.	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'hm (city)	5.75	6.55	6.90[3]	5.70	...	5.70	7.53	...	5.85	6.10	8.25
Birm'hm.(w'hse)	5.60	6.40	6.75[3]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city)	6.55	8.10	9.05[3]	6.60	8.90	6.55	7.75	...	6.55	6.60	9.20
L. A. (w'hse)	6.35	7.90	8.85[3]	6.40	8.70	6.35	7.53	...	6.35	6.40	8.70
San Francisco	6.65	7.80[4]	8.90[3]	6.60	...	6.45	8.20	...	6.45	6.50	8.60
Seattle-Tacoma	7.05	8.60[3]	9.20[3]	7.30	...	6.75	9.10	11.15	6.65	6.75	8.80

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded; ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [4]3500 lb and over; [5]—1000 to 1999 lb.

appliance production are not reflected in steel orders. Consumer goods makers' steel supplies are low and users now may have a chance to build steel inventories to permitted limits. Any flat-rolled tonnage that may be released from civilian channels will find a ready outlet in defense work.

Pittsburgh—Sheet supply in this area is tightening furtnur. DO set-asides of 30 per cent on hot-rolled and 16 per cent on cold-rolled sheets, and directives will take larger bites out of the tonnage available to civilian consumers in June. Upping of the plate DO set-aside cuts into sheet production on the continuous mills. Producers are booked on DO and program tonnage into September and October.

Hot-rolled sheets are especially scarce now since producers prefer to use non-rated hot bands to keep their finishing mills in operation, rather than offer them for sale as hot-rolled sheets.

Adoption of CMP's regarded here as a promising solution of the difficult problem of distribution. It should enable producers to maintain order in scheduling defense tonnage, but with unrated consumers still left to scramble for the tonnage left over after defense needs are met, the overall supply problem will continue a terrific headache for both producers and consumers.

Cincinnati—The outlook for sheets for civilian needs in June mill schedules is no brighter. Requirements for essential programs bulge larger than for May, so that allocations for normal demands must be cut back further. In the meantime demand has remained unmodified by any production reductions due to slow-moving inventories of consumer goods.

Chicago—First month in which a local producer can accept tonnage under the NPA minimum setaside formula is January, 1952. Civilian pressure is strong and quotas fail to meet consuming requirements. For other flat-rolled products, first openings under the DO setaside are: Enameling iron sheets—July; galvanized—August; electrical sheets—September; cold-rolled sheets and strip—October; hot-rolled strip slit edge—January; and hot rolled strip rolled edge—June, 1952.

St. Louis—Sheet shipments are increasing but fail to keep up with tonnage allocated to rated or preference programs. Granite City Steel Co.'s shipments rose from 16,750 tons in February to a record 20,453 in March—almost 25 per cent. Allocations went from 15 to 25 per cent. Set asides in April will total 30 per cent of capacity, in May 38 and in June 41.

Birmingham — Considerably more sheet tonnage is going into rated work in this district. DO orders and directive program tonnage is steadily increasing. Most of the bugs are understood out of the cold-reducton mill at Fairfield and output has increased but not nearly enough to get even approximately abreast of demand.

Tubular Goods . . .

Tubular Goods Prices, Page 154

Seattle—Cast iron pipe demand is slow, agencies finding it difficult to meet prices and deliveries of competing types. Withdrawal of water service from the Gulf is another blow to cast iron sales in this area. Public works are calling for considerable pipe tonnage.

Semifinished Steel . . .

Semifinished Prices, Page 151

Birmingham—Well under way, the expansion program to add 500,000 tons annually to capacity of Tennessee Coal, Iron & Railroad Co. will include two open-hearth furnaces with a capacity of 210 tons a heat. A. V. Wiebel, president, announced existing open-hearth furnaces at Fairfield will be modernized to increase capacity from 190 to 210 tons a heat as soon as the new furnaces are ready. The company will rely largely upon its program of blending Venezuelan and domestic ores to obtain the additional tonnage.

Plates . . .

Plate Prices, Page 151

Boston—With less than 45 to 50 per cent of production available for general distribution, plate mills report mounting rated orders. Direct buying by the services is heavier, including hull plates for the Navy, heavy gages for Watertown, and fuel tanks for petroleum and aviation facilities. Increased ratio of weldment orders is covered by ratings and backlogs are growing. Welded steel pipe in large diameters is taking a greater slice from the plate pool.

Pittsburgh — Some producers are putting their entire production of plates into rated and program orders. DO set-aside is now 30 per cent alone. One producer here is rolling more plates currently than it did in the base period, first 9 months of 1950. All its production is scheduled for defense and support programs. Orders are being taken now on a month-to-month basis, producers declining to commit themselves too far into the future. Demand for heavy plates is slightly heavier. Failure of the railroad car program to come closer to its goal of 10,000 units monthly by this time is disappointing in view of the large tonnages of steel channeled to the car shops over the past several months. However, about 90 days are required for accumulation of inventory, cars started in January only now being put into service. Expectations are the 10,000-unit monthly output pace will be hit before end of the first half of the year.

Birmingham — Consumers without ratings are feeling the pinch in plate supply on an increasing scale. There is slight propect for any improvement under present conditions. Bookings on allocated plates extend months ahead.

Richmond, Calif.—Rheem Manufacturing Co. expects a "staggering" demand for steel drums from the military, says R. S. Rheem, president. He told stockholders the demand already is "heavy."

Seattle—Smaller plate fabricators are seeking jobs with DO priorities in order to keep operating. Many government agencies are demanding deliveries which are impossible under current rolling schedules. Several sizable plate contracts have been awarded or are pending for classified government installations in this area.

Wire . . .

Wire Prices, Page 153

Cleveland—Volume of rated orders on producers' books is heavy and demand continues just as pressing as at any time in recent months. Whether additional cutbacks in tonnage for the civilian trade will be necessary over coming months is uncertain. Closer balancing of supplies with defense and directive requirements under CMP may result in some easing of the supply situation.

Current market attention centers on pricing action under consideration by stabilization authorities. Initial meeting of the Resale Merchant Trade Steel Products Industry Advisory Committee with officials of OPS was held recently. This trade, composed largely of jobbers and wholesalers of merchant steel products, handles poultry netting, nails, wire fence, formed roofing and siding, and standard pipe. This initial meeting was exploratory in nature preliminary to the development of a pricing formula for the trade.

Committee members are plugging for adoption of a formula based on a percentage markup as the most practical, this method of pricing being traditional and generally in vogue in the trade. It also is recommended that small quantity sales not be included in the wholesale price formula, rather that such be covered by a separate regulation.

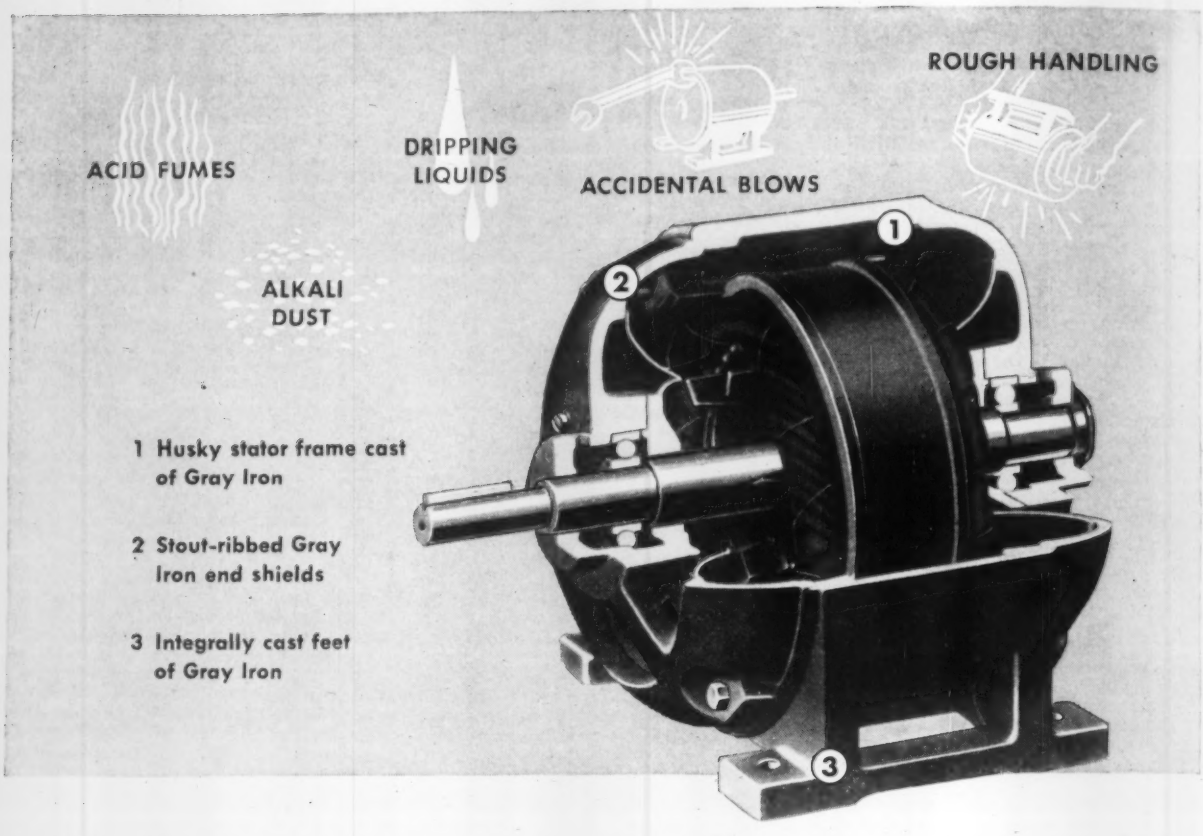
Boston—As to effect of sub-contracting on wire demand, the surface has hardly been scratched, notably for aircraft. Contracts totaling millions have been placed, and subcontracts are mounting. Many consumers of carbon wire have limited DO volume, but the total is increasing. Substantial tonnage of rods for the Navy currently is pending. Most civilian wire users are now getting substantial cutbacks in allocations. Screw makers are generally covered on defense orders.

Chicago—Demand for wire and wire products exceeds output. Deliveries are extended and strictly on a quota basis. Fencing and posts are about the only items for which pressure is somewhat lessened. This is seasonal pattern. Overall defense orders of one wire mill total about 11 per cent, up 1 per cent over a month ago. Of wire rod output DO ratings account for 25 per cent, rise of 5 points.

Birmingham — Scarcity of wire items continues. Manufacturers wire is at a premium, but the pinch in nails is not quite so great. Wire fencing remains on the scarce list.

Refractories . . .

Pittsburgh—Refractories supplies continue tight. Sellers are booked into 1952, deliveries extending 10 to 12 months on some brick. Normal maintenance programs, improvement of operating facilities and new construction are factors for strength. Construction of by-product coke ovens is placing particular emphasis on silica brick. Light-weight and insulating brick are in great demand for heat-treating and reheating furnaces. This type refractory is being used as facing brick for soaking pit covers and is scarce.



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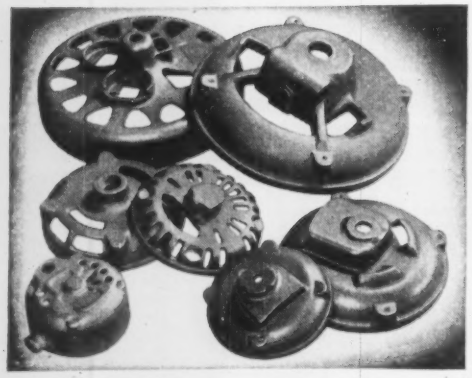

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Reinforcing Bars . . .

Reinforcing Bar Prices, Page 151

Boston—Unless the project is covered by a rating, procurement of sizable reinforcing steel tonnage is doubtful. Some concrete bar fabricators are committed for the remainder of this year at current allocations and are not quoting contractors on substantial new volume. No quotation was given on several thousand tons required for veteran hospital buildings, Brockton, Mass. For bridges and housing, difficulty is experienced in placing 2500 tons. Where reinforcing steel is quoted on new contracts, prices are higher. Imported steel offers some relief.

Los Angeles—Reinforcing bar producers are taxed to supply tonnage for quickening military and naval construction in the Far West, topping $2 million per day. Public engineering construction was 59 per cent higher in March than in February.

San Francisco—About 450 tons of reinforcing steel have been committed for a $2 million warehouse to be built in South San Francisco by General Warehouse Co. for lease to General Services Administration. Also committed for the same building is $200,000 worth of Sprinkler piping. Construction will begin May 10.

Seattle—Rolling mills report capacity operations, sizable backlogs and a strong demand for reinforcing bars. Small orders are more numerous as government directives are being clarified and builders are getting authority to proceed. Bulk of bookings are for government account.

Structural Shapes . . .

Structural Shape Prices, Page 151

Boston — Fabricated and erected steel costs are higher, notably firm prices without escalator contract provisions. Low of 24.70c per pound in place, bridge superstructure, Merrimac river, 4250 tons, was top for large tonnage work in this category up to Apr. 16. This was a firm bid with completion likely to extend into 1953. Not many months back heavy bridge quotations ranged around 15.00c per pound and even lower. Because plain material premiums must be paid for at least part of small tonnage contracts, fabricated steel for building is also higher. Most such volume is rated and includes chiefly schools and hospitals.

Philadelphia—Structural buying is spotty, although an increasing amount of industrial construction is in prospect. A 4100-ton award by the Budd Co. features new buying. The New Jersey turnpike, under construction, has received a federal defense rating assuring steel for completion on schedule.

Pittsburgh—Structural shape producers are receiving inquiries under DO-48, reported covering power plant construction. Confusion surrounds use of this rating number since it is unfamiliar to sellers. If it includes power line construction the light structural market will bear the major burden of demand. Most producers are awaiting clarification of DO-48 before acting on the inquiries.

Expected relief due to building restrictions will not be felt here. Bans on certain types of construction have freed some tonnage but the major construction in this area is industrial development. Fabricators deny that building activity is falling. They point out that if highway bridge construction is made a part of the defense-support program the market will tighten even more.

Los Angeles—The gray market, previously concentrated in sheets and plates in this district, has spread to structurals. Fabricators are paying up to $400 per ton for 4-in. I-beams on the gray market.

Seattle—Major structural contracts are scheduled for the immediate future as bids are received for important Alaska military installations. Shortage of inventory is handicapping bidding for large jobs. Plants are taking all materials available from Coast mills, but special items from eastern producers are short with deliveries uncertain.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 154

Pittsburgh—Negotiations for exportation of Connellsville beehive foundry coke are reported under way. Swedish interests, attempting to conclude a purchase, are encountering difficulty in obtaining an export license, however. State Department will not accept orders without an affidavit from the prospective user, thus preventing the coke from falling into the hands of undesirable parties. Inquiries cover several thousand tons.

Rumors have gained impetus due to a definite easing in the beehive coke market these past several weeks. Supply will definitely tighten soon, however, since the Pittsburgh Steel Co.'s blast furnace at Monessen, Pa., is expected to resume production shortly and the Youngstown Sheet & Tube Co.'s stack at Youngstown, O., should be in operation by end of the month. Each furnace will use 15,000 to 20,000 tons of coke per month.

Byproduct foundry coke continues in tight supply but no foundries have curtailed operations because of lack of sufficient tonnage to support current operating schedules.

Scrap . . .

Scrap Prices, Page 158

Detroit—Lack of scrap partly explains the decline in availability of conversion ingots from electric furnace operators. However, operations in this district are adequately supplied, when shortages occur help being immediately promised by NPA allocation.

Dealers here and there are understood holding scrap off the market because of excess profits angles, and, in scattered cases, it is said they are building inventory now at top prices, against sales far in the future. Such practice is not believed widespread.

Primary reason for slowness of scrap shipments is extremely wet weather which has bogged down country collections. Noticeable, too, is a decline in industrial scrap generation and a dearth of machinery for scrapping.

Some upgrading is reported. Rumor has it government inspectors are working in the area checking shipments for violations of OPS regulations.

Buffalo—Scrap collections are improved, but one large mill is forced again to make withdrawals from reserve stocks because a blast furnace is out for relining. The gain in receipts, however, has enabled another mill to maintain production without pulling from reserves. Additional water receipts are expected to ease the supply situation. Available supplies of cast material are falling far short of demands.

Philadelphia—While the movement of scrap is improving slightly, consumers of both steel and cast grades continue to lose ground on inventories. Some have only a few days' supply on hand. Various changes in the scrap price schedule have been decided upon by Washington officials, but await legal sanction.

Pittsburgh — Scrap collections are improving despite cold and rainy weather. Some cases of upgrading were uncovered last week but such is not so prevalent as it was two or three weeks ago. Possibly just as much upgrading is practiced but producers are less willing to admit paying higher prices so long as they get the scrap. Foundries' inventories are extremely low. Some relief is expected over the next month as weather conditions permit better country collections.

Cincinnati — Melters are seeking more iron and steel scrap in efforts to bolster below-normal stocks. Tonnage, however, is inadequate to more than keep present melting levels from slipping. Foundries are becoming more dependent on alloted material.

St. Louis—Scrap supplies continue tight but adequate. Railroad material is now 100 per cent allocated and dealer scrap about 15 per cent. Brokers anticipate all-out allocations by June. Shipments have picked up mildly. Foundry demand is insistent.

Birmingham—Scrap users are hard pressed for supplies. Republic Steel Corp. is reported to have gone far afield for tonnage without too much success and is now taking 50-ton shipments where 80-tons was pretty much a minimum previously. Upgrading is not nearly so marked since several shipments were declined. Heavy melting and cast grades are difficult to get.

San Francisco—Cast iron grades of scrap are being drawn out of this area by midwest consumers, despite the shortage here. Foundrymen question the logic of dealers shipping quantities out of the state when the final price still is the same whether sold here or elsewhere. Midwest purchasers are footing the entire freight bill. Scrap iron is being sent into the southern California markets, also likewise understood to be under raid by Midwest purchasers. As a consequence, local foundries are hard pressed to obtain sufficient supplies for adequate operations of their plants and constantly are dipping into meager inventories.

Seattle—Scrap buyers report delay in dealing with those government agencies which are offering material for sale, as there is confusion over price directives. Dealers claim the regulations are unfair to them because plants are buying from truckers, f.o.b. plant, at $2.50 above prices paid yard dealers. Honolulu is still

offering considerable tonnages of scrap, some of it purchased by Portland, Oreg., mills. Local buyers are figuring on 500 tons available at Coulee dam. Mill inventories are subnormal and are declining monthly. Receipts have increased, but the future is regarded with anxiety. Bethlehem Pacific's local mill received a 9000-ton cargo of commercial scrap from the Philippines.

Chicago—Steelmaking scrap is becoming available in better volume but the total falls short of meeting requirements. Inventories continue to shrink and are now about one month compared with a normal 60 to 90 days. Significant tonnages of dealer scrap are lost to this area each week through NPA allocations. Cast grades are extremely scarce and foundries are fighting a losing battle to offset pig iron shortages.

OPS Scrap Schedule Revised

Washington—OPS ceiling price regulation 5 is amended effective Apr. 24, providing that No. 1 bundles may now include chemically detinned scrap. Definitions of iron and steel scrap also are clarified to distinguish between reusable items and scrap.

Premium ceiling prices on specialty grades bought for use in electric furnace acid open hearth plants and foundries may be paid only when the scrap is for use in such facilities, whereas, when such scrap is bought for use in basic open hearth furnaces, no higher than the prices on melting steel scrap may be paid for it. The foregoing provision was made at request of NPA Iron & Steel Division to facilitate allocation of scrap.

The premium price on shafting, that's the ceiling price on shafting, may be paid only when the shafting is bought for forging and rerolling. When it is bought for melting purposes, the melting steel price prevails. The premium ceiling price on solid steel railroad axles may be paid only when the axles are to be used for rerolling and forging.

Prices are rolled back slightly on pit scraps, ladel scraps, salamanders, skulls, skimmings, scrap from slag dumps, etc. to reflect more nearly the real value of the iron contents of such scrap.

In addition, specifications are changed slightly on No. 2 bundles, bar crops and plate scrap, punchings and plate scrap, foundry field scrap, and some railroad grades to bring them in line with present trade usage.

Rails, Cars . . .

Track Material Prices, Page 153

Pittsburgh—Plate, bar and shape producers are watching the railroad car program closely. Finished units for March totalled only 7011 cars, far below the goal of the industry. Output for the month, however, was approximately 20 per cent above that of February. Ninety days are required to complete a unit. Cars begun in January are reaching completion this month. April is expected to be the largest production month so far this year and May likely will be the first month in which output hits the scheduled 10,000-unit mark.

Chrome Ore . . .

New York—Due primarily to higher ocean rates, South African Transvaal chrome ore, 44 per cent no ratio, advanced $3 a ton to $27-$28 per gross ton, f.o.b. cars, eastern seaboard; 48 per cent no ratio $3 to $34-$35.

Pig Iron . . .

Pig Iron Prices, Page 150

New York—Prices of foreign iron are advancing so appreciably that consumers are all but losing interest. They claim they cannot pay the prices asked and still keep their prices on castings within bounds. Turkish basic is offered at prices ranging around $75-$78, c.i.f., and is being offered in such quantity as to make it difficult to obtain cargo space. Turkish producers refuse to make shipments in lots of less than 10,000 tons. Belgian foundry iron is being offered at around $89, c.i.f., with no takers reported to date. Some specialty irons, such as charcoal low phos iron from Scandinavia, is being quoted at around $107, c.i.f.

Buffalo—Failure of demand for national emergency requirements to increase more rapidly is surprising the merchant pig iron trade. Current production is unable to match demand, but the latter is still originating primarily from producers of civilian items. Michigan motor casters are drawing heavily on local output. Shippers note improvement in the railroad car situation.

Philadelphia—Pig iron supply is tighter than at any time. Importations are coming through slowly and domestic shipments are tightening.

Pittsburgh—Merchant iron supply in this area is critical. Foundries have dropped extra shifts and in some cases have reduced operations from six to five days or five to four days. The merchant producer in this area is fully committed but still receives inquiries from outside the district. United States Steel Co.'s Carrie No. 1 blast furnace is operating after being blown out Mar. 4 for partial relining. It was blown in Apr. 11.

Cleveland—Merchant pig iron suppliers are apportioning tonnage among their customers so as to prevent serious supply hardships. The foundries are clamoring for more iron than they are getting, but it is noteworthy that despite limited inventories foundry melting schedules, in the main, are being sustained without interruption. Some of them have had a narrow squeak, several threatened shutdowns being averted only by arrival of emergency tonnage from the furnaces. Relatively little dependence is placed on foreign iron by melters here though some imported material is reported coming into the area. Blast furnace operations in the immediate Cleveland district are at 100 per cent of capacity, all 9 stacks being in blast.

Cincinnati—Pig iron shipments into this district are far short of needs. Currently, supplies of foreign iron are helping ease the shortage. Demand for castings for defense use is increasing. Meanwhile, foundries on civilian requirements are taking in all the iron they can obtain.

Chicago—Jobbing foundries are keeping operations on fairly even schedule in the face of limited pig iron, coke and scrap supplies. Suppliers manage to keep shipments moving regularly within the limits of customer quotas. Some foreign iron is available on an irregular basis and gives a lift to melting operations. Backlogs are heavy in all types of castings. Of the district's 42 blast furnaces, 40 are active.

Birmingham—Pig iron supplies are acutely short. Castings production however, is well maintained. Additional iron for projected expansion of the melt is out of the question.

Los Angeles—With DO order backlogs ranging from 20 to 60 per cent, melters' No. 1 problem is getting enough pig iron to maintain higher melting rates.

San Francisco—Foreign pig iron has proved a "life saver" to foundries some of which are completely out of domestic supplies. The foreign pig iron is chiefly from Holland and Chile. The price, for a while about $1 a ton cheaper than domestic grades, has been advancing and now tops the ceiling price of the home product.

Seattle—Local foundries were down last week on account of labor troubles. Supply of cast iron scrap is sufficient for local requirements. Eastern buyers are operating in California, but have not invaded the local market. Pig iron continues tight. Domestic is almost unobtainable and foreign iron is costly and deliveries months distant.

Warehouse . . .

Warehouse Prices, Page 160

Boston—Operating with inventories 35 to 40 per cent of normal, steel warehouses confront further pressure on stocks over the next few weeks. Of current inventory, substantial tonnage is made up of slow products.

Philadelphia—Warehouse stocks are far below what they were early this year, due primarily to heavy demands under DO-97 ratings for maintenance and repair tonnage.

Pittsburgh—NPA order M-6 amended, stipulates warehouses receive 85 per cent minimum of their base period receipts, but full effect of the regulation will not be determinable until June since rolling schedules were determined for April and May before the ruling was announced.

Cleveland—Warehouse trade interest currently centers on expected price action by the government economic stabilization authorities. Ceiling price regulations governing sale of steel by distributors have been under consideration for weeks past. Last week OPS met with the industry advisory group to discuss the problem. Rumor has it the price order is about ready to be issued. As reported in STEEL (Apr. 16, p. 140) the pricing formula is expected to set ceiling prices for the separate warehouses based on their average monthly product cost at the mills, plus the percentage warehouse markup, plus mill extras and freight. This formula, if effected, is expected to result in a multiplicity of prices in the various marketing areas; also monthly fluctuations as warehouse costs rise or fall in line with varying monthly product receipts and supply sources.

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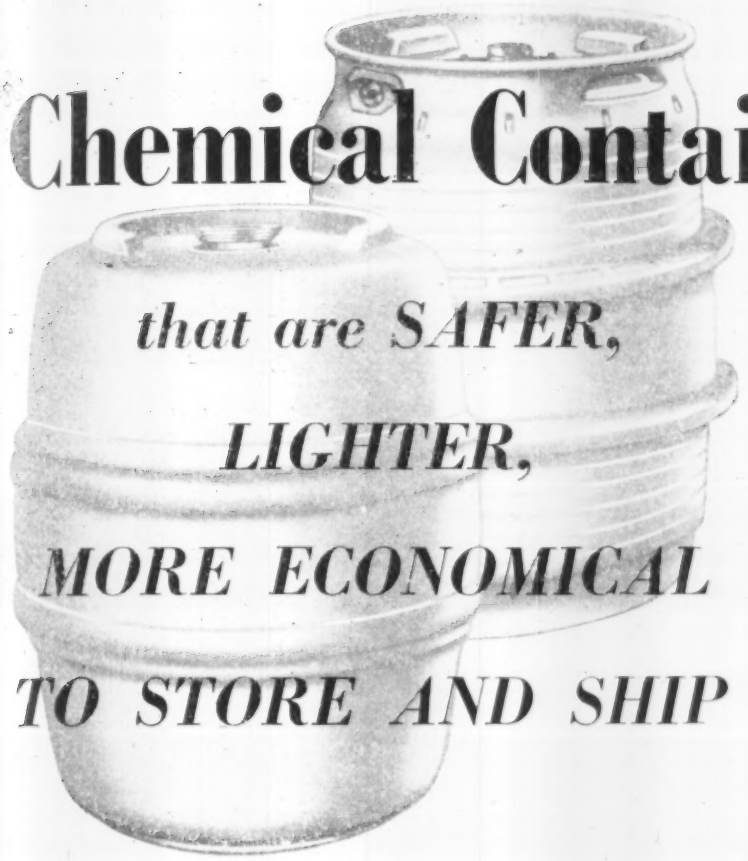

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STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1925 tons, buildings and facilities, air base, Limestone, Me., to West End Iron Works, Cambridge, Mass. (1310); Bancroft & Martin Rolling Mills Co., Portland, Me. (345) and Lyons Iron Works, Manchester, N. H., (270); Davidson Construction Co., Manchester, N. H., general contractor.

1000 tons or more, synthetic fiber plant, Chemstrand Corp., Decatur, Ala., to Stupp Bros. Bridge & Iron Co., St. Louis, and Truscon Steel Co., Birmingham; Daniel Construction Co., Birmingham, general contractor.

700 tons, barking plant, tanks, digesters, etc., Great Northern Paper Co., Millinocket, Me., to Bancroft & Martin Rolling Mills Co., Portland, Me., and Mequilier & Jones Co., Portland, Me. Stone & Webster Engineering Corp., Boston, contractor-engineer.

550 tons, two-span through truss bridge, Great Northern Paper Co., Millinocket, Me., to American Bridge Co., Pittsburgh, Pa.

185 tons, chemistry building, University of North Carolina, Chapel Hill, N. C., to Bristol Steel & Iron Works Co., Charlotte, N. C.; William Muirhead Construction Co., Durham, N. C., general contractor.

100 tons or more, buildings, Walter E. Fernald state school, Waverly, Mass., to West End Iron Works, Cambridge, Mass.; M. Spinelli & Sons Inc., Boston, general contractor; reinforcing bars to Joseph Morgan, Boston.

100 tons, Seth G. Henley school, West Haven, Conn., to Connecticut Steel Co., New Haven, and Fox Steel Co. (bars), Orange, Conn.; N. E. General Construction Co., North Haven, Conn., general contractor.

STRUCTURAL STEEL PENDING

7000 tons, superstructure, single and double deck elevated highway, Charlestown section, Central artery, Boston; Harris Structural Steel Co., New York, low, $3,889,002 with maximum escalation of $185,000; bids Sept. 17, Department of Public Works. This fabricator quoted 24.00c a pound on 2295 tons of silicon steel in place and 22.75c on balance of carbon steel. Bids close May 15 on another section, contract E-2, superstructure, direct on steel, involving about 6500 tons.

7000 tons, completion McNary dam, spillway, abutments, etc.; Atkinson-Ostrander-Jones joint low bidders to U. S. Engineer, Walla Walla, Wash.

4250 tons, steel superstructure, bridge, Merrimac river, Amesbury-Newburyport, Mass., Hartis Structural Steel Co., New York, low.

4100 tons, plant additions, Budd Co., Philadelphia, to Belmont Iron Works, Eddystone, Pa. Of this tonnage, 2500 tons is for a tempering building and machine shop at the Untington Park Avenue plant and 1600 tons for a press shop at the Red Lion plant.

4000 tons, various Alaska military installations; bids to U. S. Engineer, Seattle, last half April.

150 tons, plant addition, American Viscose Corp., Nitro, W. Va.; bids Apr. 22.

150 tons, plant addition, Midvale Co., Nicetown, Philadelphia; bids closed Apr. 19.

130 tons, plant addition, Universal Arundel Corp., Camden, N. J.; bids closed Apr. 17.

100 tons, plant addition, Standard Steel Works, Burnham, Pa.; bids closed Apr. 20.

Unstated, rectifier towers and other construction, Seattle city light; bids to Seattle, Apr. 18.

Unstated, base headquarters building, Ladd air base, Alaska; Kuney-Johnson Co., Seattle, low $364,000.

Unstated, two structures Ladd and Eielson air fields, Alaska; A. J. Hopper Co., low to U. S. Engineer, Anchorage, $713,360.

Unstated, spillway, stop logs and other items, Rock Island, Washington, plant expansion; bids to Stone & Webster, Boston, Apr. 23.

Unstated, outlet gates, etc., Lookout Point dam, Oregon; bids to U. S. Engineer, Portland, Oreg., May 3.

Unstated, heated vehicle storage building, Fort Richardson, Alaska; J. H. Pomeroy Co. Inc., San Francisco, apparently low, $959,000.

Unstated, warm storage vehicle building, Elmendorf air force base, Alaska; J. C. Boespflug Co., Seattle, apparently low $318,718.

Unstated, Chulitna river bridge, Alaska; M. P. Butler, Seattle, low to Alaska Railroad, $105,850; steel, government-furnished.

REINFORCING BARS . . .

REINFORCING BARS PLACED

2200 tons, Canyon Ferry power dam, Idaho state, to Bethlehem Pacific Coast Steel Corp., Seattle, by Washington Water Power Co., Spokane, Wash.

150 tons, territorial office building, Juneau, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Carson Construction Co., Helena, Mont., general contractor.

125 tons, chemistry building, University of North Carolina, Chapel Hill, N. C., to Virginia Steel Co., Richmond; William Muirhead Construction Co., Durham, N. C., general contractor.

100 tons, Navy communications center and other construction, to Bethlehem Pacific Coast Steel Corp., Seattle; Turnquist Construction Co., Seattle, general contract low $310,741.

REINFORCING BARS PENDING

35,000 tons, completion McNary dam, Oregon, Atkinson-Ostrander-Jones, joint low bidders, $58,416,459, to U. S. Engineer, Walla Walla, Wash.

725 tons, substructure, bridge, Merrimac river, Amesbury - Newburyport, Mass., Merritt-Chapman & Scott Corp., Boston, low.

250 tons, D. T. Denny grade school, Seattle; Strand & Sons, Seattle, low $1,466,500.

240 tons, (also 100 tons shapes and railing) Washington state Portage bridge; Manson Construction Co., Seattle, low $321,042.

PLATES . . .

PLATES PLACED

235 tons, tank, National Lead Co., Sayreville, N. J., to Bethlehem Steel Co.

150 tons, steel reservoir, Alexander Water Co., Alexandria, Va., to Chicago Bridge & Iron Works, Chicago.

PLATES PENDING

9000 tons, underground fuel storage tanks, Navy, Norfolk, Va., San Pedro, Calif., and Seattle, Wash.; bids in.

1000 tons, completion McNary dam; base bids in.

Unstated, corrugated metal pipe, 48 and 60 inch diameter; Armco Drainage Co. low $10,364 to U. S. Engineer, Portland, Oreg.

Unstated tonnage, elevated water tank and tower, veterans' hospital, Brockton, Mass.; Pittsburgh-Des Moines Steel Co., Pittsburgh, low, $59,730.

PIPE . . .

CAST IRON PIPE PENDING

125 tons, various sizes; bids to Medford, Oreg., Apr. 18.

Unstated, 3035 feet 8 and 6 inch, distribution system government moorings, Portland, Oreg.; bids to U. S. Engineer Apr. 26.

RAILS, CARS . . .

RAILROAD CARS PLACED

275 freight cars, Illinois Terminal Railroad; order includes 150 seventy-ton coal hoppers, 100 fifty-ton flat bottom gondolas, and 25 seventy-ton low-side gondolas.

Necessity Certificates

(*continued from page* 45)

Allegheny Ludlum Steel Corp., Watervliet, N. Y., stainless steel, $3,200,000 70%.

Sun Oil Co., Marcus Hook, Pa., benzene, toluene, $8,380,000, 85%.

Lockheed Aircraft Corp., Burbank and Van Nuys, Calif., airplanes, $3,371,238, 85%.

Bell Aircraft Corp., Wheatfield, N. Y., research, development engineering, $250,000, 75%.

Heli Coil Corp., Danbury, Conn., bushings, screw members, tools, $244,429, 80%.

Jack & Heintz Precision Industries Inc., Maple Heights, O., aircraft rotating electrical equipment, $410,900, 90%.

Fairchild Engine & Airplane Corp., Farmingdale, L. I., N. Y., aircraft engine parts, $2,414, 75%.

Fairchild Aircraft Division Fairchild Engine & Airplane Corp., Hagerstown, Md., airplanes, $71,456, 80%.

Jones & Laughlin Steel Corp., Aliquippa, Pa., transportation—barge loading, $495,000 [illegible].

Jones & Laughlin Steel Corp., Aliquippa, Pa., slag handling, $63,000, 85%.

Jones & Laughlin Steel Corp., Pittsburgh, Pa., steel plates, sheets, strip, $3,777,987, 60%.

General Motors Corp., Vandalia, O., actuators, $244,781, 90%.

Consolidated Vultee Aircraft Corp., San Diego, Calif., aircraft, $144,851, 75%.

Wyman-Gordon Co., Harvey, Ill., engine crank shafts, $4,848,200, 80%.

Worthington Pump & Machinery Corp., Piscataway Twshp., N. J., welding equipment, $211,470, 90%.

National Steel Corp. (Weirton Steel Co. division), Weirton, W. Va., pig iron, steel ingots, etc., $422,895, 85%.

Larson & Quigley Co., Chicago, aircraft engine parts, $37,348, 90%.

Thompson Industries, Inc., Mineola, N. Y., ball bearings, $14,129, 90%.

Aluminum Co. of America (Alcoa Reduction Works), Alcoa, Tenn., primary aluminum, $912,900, 80%.

United Aircraft Corp., East Hartford, Conn., ordnance, $329,855, 80%.

Jones & Laughlin Steel Corp., Pittsburgh, Pa., steel, $379,600, 75%.

Jones & Laughlin Steel Corp., Pittsburgh, Pa., steel ingots, $101,900, 75%.

Bloom Engineering Co. Inc., Pittsburgh, equip. for indus. furnaces, pipe insulation materials, $157,080, 80%.

B. G. Corp., Ridgefield, N. J., spark plugs, $1,400,000, 75%.

Talley Machine & Mfg. Corp., Los Angeles, machine work (aircraft parts), $27,431, 90%.

The Heim Co., Fairfield, Conn., special bearings, $20,878, 90%.

Research Welding & Engineering Co., South Gate, Calif., tank assemblies and aircraft, $16,500, 90%.

Samuel Greenfield Co., Buffalo, processing steel scrap, $126,621, 75%.

J. E. Baker Co., York Co., Pa., dead burned dolomite, $2,038,895, 85%.

National Grinding Wheel Co. Inc., Tonawanda, N. Y., abrasive products, $295,117, 75%.

General Motors Corp., Cleveland, diesel engines, $1,744,282, 75%.

Siskin Steel & Supply Co., Inc., Chattanooga, Tenn., steel scrap, $39,792, 75%.

Worthington Pump & Machinery Corp., Harrison, N. J., pumps, $285,906, 85%.

Slabe Machine Products Co., Cleveland, aircraft engine parts, $23,885, 90%.

American Non-Gran Bronze Co., Berwyn, Pa., aircraft engine valve guides, $60,413, 85%.

Atlas Steel & Supply Co., Cleveland, baled scrap iron, $102,040, 75%.

Lederer Iron & Steel Co., Cleveland, scrap iron, $98,253, 75%.

Alaska Junk Co., Seattle, scrap iron, $30,000, 75%.

Apex Steel & Supply Co., Chicago, iron & steel scrap, $142,700, 75%.

Greer Hydraulics Inc., Brooklyn, N. Y., testing equip., $325,000, 75%.

Dover Stamping Co., Fall River, Mass., steel drums, $3,917, 75%.

Lufkin Foundry & Machinery Co., Lufkin, Tex., oil pumping units, $100,000, 75%.

Litton Industries, San Carlos, Calif., magnetron tubes, $248,277, 85%.

Steel City Iron & Metal Co., Inc., Youngstown, steel scrap, $14,616, 75%.

Seaboard Refractories, Raritan Township, N. J., mullite, silicon, carbide & clay refractories, $174,700, 85%.

Fitzgibbon Boiler Co., Inc., Oswego, N. Y., hulls for tanks, $1,750,000, 75%.

Murray Refractories Co., Murray, Utah, silica refractories, $86,890, 85%.

Landowne Steel & Iron, Morton, Pa., ordnance supplies, $6,500, 75%.

Minneapolis-Honeywell Regulator Co., Philadelphia, instruments for measuring, recording, $731,000, 75%.

Powers Regulator Co., Skokie, Ill., process control apparatus, valves, $1,588,390, 75%.

M. Cohen & Son Co., Cleveland, iron & steel scrap, $53,591, 75%.

Jackson Iron & Metal Co. Inc., Jackson, Mich., processing scrap metal, $20,668, 75%.

Mayer Pollock, Pottstown, Pa., steel scrap, $75,000, 75%.

Hoyne Iron & Steel Co., Chicago, copper scrap, $146,000, 75%.

Euclid Road Machinery Co., Euclid, O., scrapers, loaders, $2,017,762, 50%.

Goodyear Aircraft Corp., Akron, airplane wheels, $269,690, 85%.

California Bag & Metal Co., Portland, Oreg., sheet metal scrap, $69,000, 75%.

Abe & Albert A. Kaufman Iron & Metal Co., Cleveland, scrap iron, $26,568, 75%.

Ace Iron & Metal Co., Detroit, scrap iron & steel, $119,366, 75%.

Hartford Machine Screw Co., Windsor, Conn., aircraft engine parts, $426,213, 85%.

Laclede-Christy Co. of Colo., Canon City, Colo., clay firebrick and tile, $347,000, 85%.

Crouse-Hinds Co., Syracuse, N. Y., conduit fittings, $5,098,985, 75%.

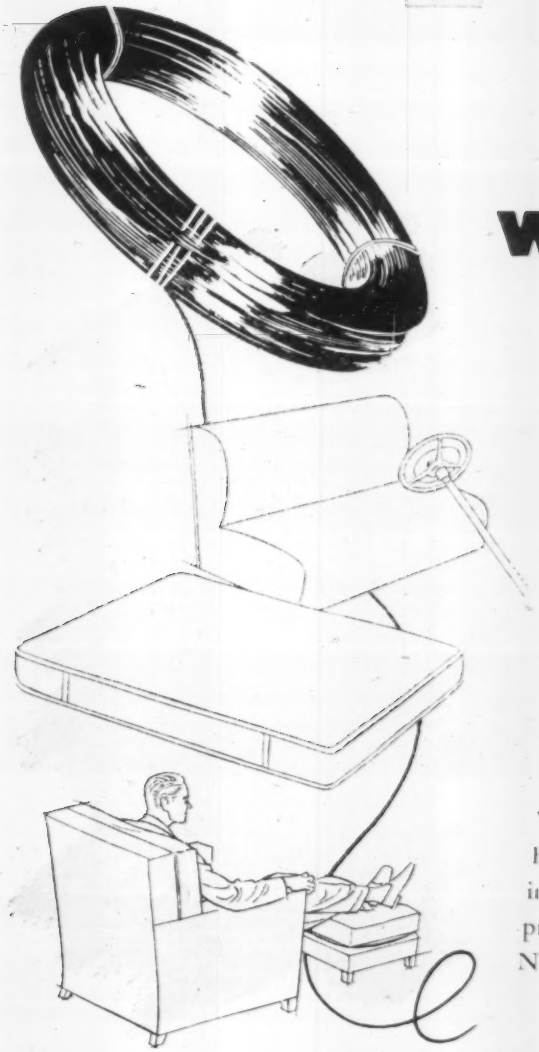
Hardinge Bros. Inc., Elmira, N. Y., lathes, $128,957, 85%.

(*Please turn to page* 168)

GAMMA SPRING WIRE

by

WICKWIRE



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PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corp., Oakland 6, Cal.

Aluminum Co. of America, Port Lavaca, Tex., primary aluminum, $5,209,375, 80%.
Clearfield Clay Products Co., Clearfield, Pa., ladle brick, $1,333,765, 85%.
General Refractories Co., Rockdale, Ill., silica refractory brick, $189,820, 85%.
General Refractories Co., Los Angeles, silica refractory brick, $462,000, 85%.
General Refractories Co., Portsmouth, O., silica refractory brick, $63,000, 85%.
General Refractories Co., Bucks Co., Pa., silica refractory brick, $3,782,550, 85%.
General Refractories Co., Joliet, Ill., silica refractory brick, $341,920, 85%.
C. A. Dunham Co., Marshalltown, Iowa, steam traps and valves, $109,418, 75%.
Mechanics Universal Joint Division, Borg-Warner Corp., Memphis, Tenn., joint assemblies for combat vehicles, $270,000, 75%.
Climax Fire Brick Co., Climax, Pa., refractories, $363,200, 85%.
Laclede-Christy Co., Bessemer, Ala., clay firebrick, $140,500, 85%.
Bendix Radio Division, Bendix Radio Corp., Towson, Md., aircraft communications and radar equipment, $1,008,474, 75%.
Laclede-Christy Co., Warm Springs, Calif., clay firebrick, $125,000, 85%.
Laclede-Christy Co., Clearfield City, Pa., clay firebrick, $200,000, 85%.
Laclede-Christy Co., Ottawa, Ill., firebrick, $220,000, 85%.
Dana Corp., Marion, Ind., transmission devices, $5,750,000, 75%.
Fairfield Mfg. Co., Lafayette, Ind., worm gears, $2,917,389, 75%.
Burgess Battery Co., Galena, Ill., dry batteries for Signal Corps, $10,000, 75%.
W. R. Cranes Co., Verona, Wis., metal fabrication and construction, $35,000, 75%.
Carborundum Co., Calvert City, Ky., aluminum oxide, $3,233,000, 50%.
American Electric Motors, Inc., Los Angeles, Calif., gyroscope motors, aircraft, $3,246, 85%.
Karl Douglas Co., Inglewood, Calif., fabrication of aircraft landing gear, $20,588, 90%.
American District Steam Co., Inc., North Tonawanda, N. Y., foundry building and equipment, $173,162, 80%.
Gerotor May Corp., Baltimore, Md., hydraulic valves, $203,680, 85%.
Monroe Scrap Metal Inc., Shreveport, La., scrap iron, $125,000, 75%.
Brown & Root, Inc., Houston, rebuilding tanks, $329,933, 75%.
Strom Steel Ball Co., Cicero, Ill., steel balls, $790,000, 80%.
Gerotor May Corp., Baltimore, valves, pumps, $42,895, 75%.
Granite City Steel Co., Granite City, Ill., pig iron, steel ingots, $63,033,900, 80%.
Wm. L. Gilbert Clock Corp., Winsted, Conn., timing units, fuses, $4,693, 85%.
Kaiser Aluminum & Chemical Corp., Moss Landing, Calif., periclase, magnesium oxide, dolomite, $915,472, 70%.
Indiana Gear Work, Inc., Indianapolis, Ind., aircraft gear units, $92,835, 85%.
Peerless Tool & Engineering Co., Chicago, precision machining & fabricating aircraft engine components, $149,087, 90%.
Wyckoff Steel Co., Chicago, steel bars and shapes, $685,350, 60%.
Wyckoff Steel Co., Ambridge, Pa., steel bars, carbon and alloys, $118,385, 60%.
Maglova Mfg. Co., Los Angeles, aircraft valves, $10,989, 90%.
Monarch Steel Co., Hammond, Ind., steel bars, $300,000, 60%.
Associated Iron and Metal Co., Oakland, Calif., scrap iron, $40,630, 75%.
Wisconsin - Appleton Co., South Milwaukee, Wis., iron castings, $1,203,419, 75%.
Metal Fabricators Corp., Waltham, Mass., aircraft engine parts, $29,000, 75%.
Cameron Iron Works, Inc., Houston, forged and rough machined beech rings, $2,916,114, 75%.
Bendix Products Division, Bendix Aviation Corp., South Bend, Ind., aircraft landing gear, $1,183,668, 80%.
Stoner Mfg. Co., Aurora, Ill., brass cartridge cases, $144,649, 75%.
Lake Erie Engineering Corp., Tonawanda, N. Y., hydraulic presses, $271,758, 80%.
The National Radiator Co., Danville, Pa., iron powder, $4,592,530, 60%.
Greenback Metal Powder Co. Inc., Dayton, O., iron powder, $4,726,605, 60%.
Bower Roller Bearing Co., Detroit, roller bearings, $2,122,686, 85%.
The Stanley Works, New Britain, Conn., cold rolled steel, $906,182, 60%.
Gladding, McBean and Co., Pittsburg, Calif., fire clay refractory products, $1,683,589, 85%.
Gladding, McBean and Co., South Gate, Calif., brick refractory, $655,050, 85%.
Chrysler Corp., Detroit, rear axle housings, $196,591, 90%.
Johns Hartford Tool Co., Inc., Hartford, Conn., aircraft engine parts, $5,038, 90%.
E. and G. Brooke Iron Co., Berks County, Pa., pig iron, $130,456, 85%.
United Aircraft Corp. (Hamilton Standard Division), Windsor Locks, Conn., aircraft propellers, $16,800,000, 75%.
United Aircraft Corp. (Pratt and Whitney Aircraft Division), North Haven, Conn., aircraft engines and parts, $14,000,000, 75%.
United Aircraft Corp. (Pratt and Whitney Division), East Hartford, Conn., aircraft engines, $8,400,000, 75%.
Kortumel-Heffron and Preiss Steel Co., Evanston, Ill., cold rolled spring steel, $1,167,804, 60%.
Cold Metal Products Co., Youngstown, strip steel, $1,267,185, 60%.
Canton Drop Forging & Mfg. Co., Canton, O., propeller extrusions, $114,306, 75%.
Canton Drop Forging & Mfg. Co., Canton, O., forgings (jet engines), $250,000, 75%.
SKF Industries Inc., Philadelphia, roller bearings and locknuts, $5,749,693, 85%.
Stover Lock Nut & Machinery Corp., Easton, Pa., safety nuts, tank track pins, $200,000, 70%.
Latrobe Electric Steel Company, Latrobe, Pa., tool steels (high speed), $4,149,000, 75%.
Pacific Piston Ring Co., Los Angeles, aircraft valves, $30,303, 90%.
American Brake Shoe Co., Chicago, forgings for tank track, shell bodies, $172,969, 80%.
Avon Tube Div., Higbie Mfg. Co., Rochester, Mich., electric-weld steel tubing, $209,240, 60%.
Norma-Hoffmann Bearings Corp., Stamford, Conn., instrument ball bearings, $350,000, 75%.
SKF Industries Inc., Shippensburgh, Pa., roller, ball bearings, locknuts, $886,105, 85%.
Eaton Mfg. Co., Battle Creek, Mich., blades for jet engines, $848,318, 75%.
Coast Centerless Grinding Co., Los Angeles, precision grinding, honing, lapping and machine work, $48,215, 90%.
Commercial Construction Co. Inc., Houston, scrap iron, $80,138, 75%.
Commercial Metals Co., Houston, scrap iron, $50,000, 75%.
Jones and Laughlin Steel Corp., Pittsburgh, transportation (towboats, barges), $720,175, $1,833,525, 70%, 80%.
National Steel Corp., Lorain, O., transportation (lake freighter), $6,500,000, 80%.
California-Doran Heat Treating Co., Los Angeles, steel fittings, bolts, $151,672, 75%.
Axelson Mfg. Co., Vernon, Calif., aircraft assemblies, $230,688, 85%.
Kennecott Copper Corp., White Pine County, Nev., virgin copper, $3,987,910, 85%.
Rotary Electric Steel Co., Macomb County, Mich., alloy and stainless steel billets, $880,000, 60%.
Aluminum Co. of America, Cleveland, aluminum, aircraft engine forgings, $2,749,000, 75%.
Fuller Mfg. Co., Kalamazoo, Mich., automotive transmissions, $1,101,010, 80%.
Jones and Laughlin Steel Corp., Pittsburgh, steel scarfing, $1,343,695, 70%.
Stoner Mfg. Co., Aurora, Ill., brass cartridge cases, $15,993, 75%.
Inland Equipment Co., Nashville, Tenn., rocket head assembly, $56,534, 85%.
Olin Industries Inc., Covington, Tenn., dry batteries, $490,510, 75%.
Aircraft Hardware Mfg. Co., Inc., New York, N. Y., aircraft hardware, $19,976, 85%.
Rem-Cru Titanium Inc., Midland, Pa., titanium ingots, $450,000, 75%.
Ingersoll Steel Division, Borg-Warner Corp., New Castle, Ind., steel ingots, $562,368, 75%.
Island City Iron & Metal Co., Galveston, Tex., scrap iron, $25,000, 75%.
Moskowitz Bros., Cincinnati, scrap iron, $20,000, 75%.
Aircraft Precision Products, Inc., Oak Park, Mich., parts for jet engines, $52,211, 90%.
Ohio Ferro-Alloys Corp., Philo, O., ferro-silicon, $237,500, 85%.
Metalweld, Inc., Philadelphia, spraying protective coating on shafts, $213,000, 60%.
Pacific Moulded Products Co., Los Angeles, research (rubber and rubber synthetics), $5,609, 75%.
Lukens Steel Co., Coatesville, Pa., steel fabrication and assembly, $142,000, 60%.
Tantalum Defense Corp., North Chicago, Ill., tungsten wire, sheet, and fabricated parts, tungsten powder, $827,193, 85%.
Globe Steel Tubes Co., Milwaukee, steel tubing, $780,434, 75%.
Wells Aircraft Parts Co., Los Angeles, machined aircraft parts, $4,188, 85%.
Hydraulic Units Inc., Glendale, Calif., hydraulic controls for aircraft, $32,879, 85%.
Summers Gyroscope Co., Santa Monica, Calif., gyroscopic aircraft instruments, $70,811, 85%.
Columbia Iron & Metal Co., Girard, O., ferrous scrap, $948,715, 75%.

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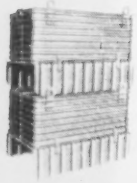
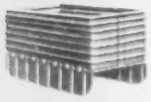
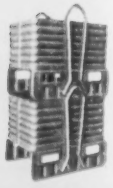

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Metalworking Briefs . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Tennessee Prepares for Boom

Converse Bridge & Steel Co., Chattanooga, Tenn., will build a steel handling terminal on the Tennessee river in that city at an estimated cost of $500,000. A public use warehouse and storage facilities for commodities moving by barge are also being studied in connection with the project. Present plans contemplate ultimately moving the Converse plant from its present Ridgedale location to the river site over a period of five to ten years.

"The barge-load cost of transporting steel from Pittsburgh or Chicago is slightly less than the carload rail rate from Birmingham," P. H. Wood, president, said. "This makes possible a diversified supply of all rolled steel products.

"The tremendous increase in power-generating facilities now being installed by TVA points to the fact that under normal peacetime conditions there will be a tremendous market for steel in the Tennessee valley area where ample and cheap power, combined with low transportation costs on raw materials and bulk commodities, will be a big inducement to new industries and will increase production of existing industries."

Murray-Way Opens Plant

Because of heavier demand for Murray-Way Corp.'s automatic polishing equipment and engineering services, the company moved from its Detroit plant to a larger one situated just east of Birmingham, Mich., on Maple road (Fifteen Mile road).

Plans $1 Million Diesel Shop

Ontario Northland Railway will construct a $1 million diesel locomotive shop in North Bay, Ont. The project will get under way this spring and is a major step in the railroad's schedule for complete dieselization.

Buffalo Arms Expanding

Buffalo Arms Inc., Buffalo, N. Y., took over the former R. H. Thompson Co. plant at 717 Elk St., that city, to start preliminary work on a government contract that may run as high as $8 million. Buffalo Arms plans to build a $1 million plant in the Buffalo area and has placed substantial orders for machinery.

Will Build Forging Plant

A plant will be built in Toronto, Ont., for A. V. Roe of Canada Ltd., that city, to forge turbine and compressor blades for jet propulsion engines. This company is building planes for the Canadian government. The plant will be erected by Canadian Steel Improvement Ltd., a recently organized and wholly-owned subsidiary of Steel Improvement & Forge Co., Cleveland.

Ford Modernizes Plant

A modernization and improvement program is under way at the Green Island plant of Ford Motor Co. near Albany, N. Y. The program is expected to cost about $1 million and will include addition of considerable machinery and equipment.

United Can & Glass Co.

Atlas Imperial Diesel Engine Co., Oakland, Calif., which sold its engine division six months ago, is changing its name to United Can & Glass Co., to reflect its present operations.

Douglas Builds Parts Plant

Construction of a $1.2 million building is underway at Douglas Aircraft Co.'s Santa Monica, Calif., plant. The building will be used for parts fabrication and will provide facilities for 3000 workers.

Plans To Double Foundry

American District Steam Co. Inc., North Tonawanda, N. Y., will erect a building that will double the size of its foundry. It also will install a considerable amount of machine tools and other equipment. The firm has about $500,000 worth of defense orders.

Wire Firm Builds Addition

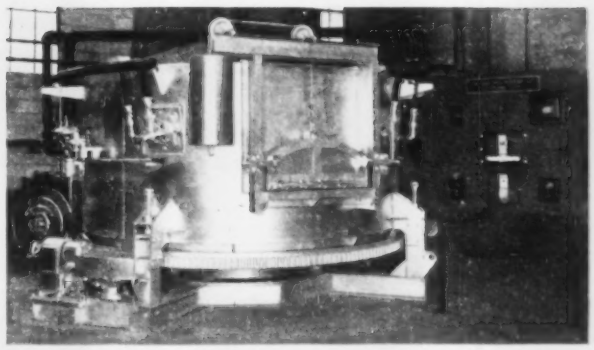
Essex Wire Co., Anaheim, Calif., is constructing an addition to its plant on Patt street, that city.

Snap-Tite Leaves Erie

Snap-Tite Corp. moved to a larger plant at 201 Titusville Rd., Union City, Pa. The company severed all connections with its former plant in Erie, Pa. The company makes over 400 different types of swivel ball-bearing, quick disconnect couplers for the transmission of air and fluids.

Canada To Get Two Plants

Canadian Westinghouse Co. Ltd., Hamilton, Ont., plans to construct two buildings in 1951. One will be built adjacent to the motor plant on Beach road, that city, and will be used to manufacture outdoor circuit breakers



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Doctors can now cure half of those who develop cancer if the disease is diagnosed in its early stages. Yet in 1950 some 210,000 families lost a father, a mother or a child to cancer. Many of them—probably 70,000—could have been cured.

To save more lives, we all must help.

Your gift to the Cancer Crusade will help guard your family by providing more research, more life-saving education, more training for scientists and physicians, more equipment, more services for those already striken with the disease.

Cancer is man's worst enemy. Striking back at cancer costs money. Any contribution is welcome but, the fight against this major threat deserves major support: dollars—tens—twenties—hundreds of dollars. Will *you* help?

AMERICAN CANCER SOCIETY

...ocal medium-heavy equipment now produced in the main plant. A second building is to be erected on the west plant to increase manufacturing facilities for various types of electrical products.

Machine Tool Maker Moves

To better serve users of machine tools in the Chicago area, Cincinnati Milling & Grinding Machines Inc. and Cincinnati Milling Products Division, Cincinnati, are moving their Chicago offices May 1 to larger quarters at 104 N. Oak Park Ave., Oak Park, Ill. The Chicago office is managed by Carl E. Stugard.

Transitier Appoints Agent

W. T. Billard Inc., Los Angeles, one of the largest distributors in California of materials handling equipment, was appointed Southern California distributor for Transitier Truck Co., Portland, Oreg. The latter company's lift trucks range in capacity from 1000 pounds to 3000 pounds.

Engineer Expands Plant

Frederic Flader Inc., North Tonawanda, N. Y., is expanding its plant to handle an increasing volume of defense work. The company is erecting an addition to its plant, increasing manufacturing space about 50 per cent.

Metal Carbides Expands

Production of tools, tips, dies, rolls and wear resistant parts by Metal Carbides Corp., Youngstown, is being increased by over 50 per cent. The company has an addition to its plant and is installing over $100,000 of new equipment, including electric furnaces, machine tools, and powder mixing and crushing equipment.

Boosts Malleable Iron Output

Operations at Steel Trading Corp.'s recently acquired Fort Pitt Malleable Iron Division's plant at McKees Rocks, Pa., are getting under way. Extensive repairs have been completed to the cupola and melting furnaces and additional repairs are being made to the annealing furnaces and other facilities to assure more uniform and increased production. Edward W. Wright continues in charge of operations as general manager, having been with the predecessor company for 30 years. Donald A. Kilpatrick, formerly associated with Lake City Malleable Co., Ashtabula, O., is assistant general manager. Plans for further plant mechanization and expansion are under consideration.

Argentina Gets Washer Plant

Thor Corp., Chicago, licensed CATITA, S. A., Buenos Aires, Argentina, to make and sell its semi-automatic washer in that country. Compania Argentina de Taeleres Industreales, Transportes y Anexos, S. A., is one of Argentina's largest producers of electrical and metal goods.

Offers Bulkheading Device

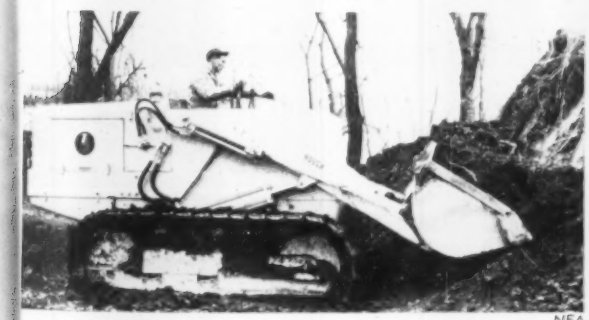
A new freight car bulkheading device, designed to minimize damage to goods in transit by preventing the shifting of loads, is introduced by Pullman-Standard Car Mfg. Co., Chicago. The compartmentizer consists of adjustable steel gates which are locked in place at ceiling, wall and floor. The protective gates may be stored in a small space at either end of the car when not in use, thus removing the need of designating the cars using the device as "special purpose" cars. There are no loose parts requiring removal or installation.

Ritter Builds Plant Addition

Ritter Co. Inc., Rochester, N. Y., will construct a plant addition which will cost about $750,000. The company makes dental and medical equipment.

Operation Porcelain

Although only a few weeks old, Porcelain Enameling Institute's "Operation Porcelain" is proving its effectiveness as an aid to porcelain enamelers throughout the country in converting to defense



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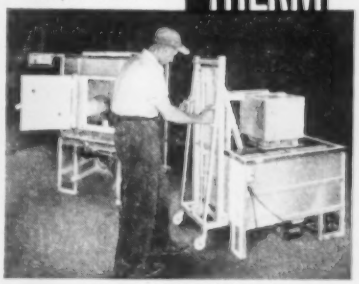

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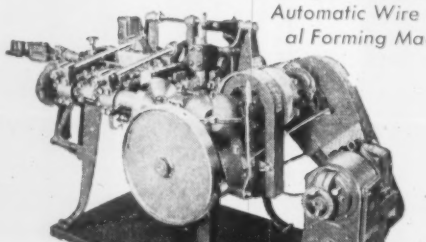

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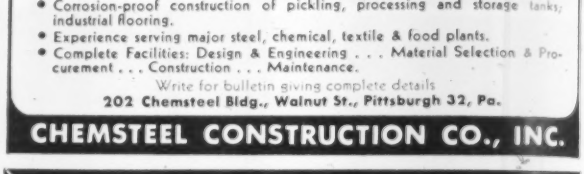

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Under guidance of the Institute's government business committee headed by P. B. McBride, Reynolds Metals Corp., Louisville, and the Institute's staff in Washington headquarters, the operation's primary functions thus far have been to relay information regarding prime and subcontracts to and from government procurement offices, as well as lay the groundwork for a complete analysis of the enameling industry's defense work potentialities.

Worthington Building Plant

A vertical turbine pump plant is being constructed at Succasunna, N. J., for Worthington Pump & Machinery Corp., Harrison, N. J. Worthington's plants or wholly-owned subsidiary plants in the United States are located in Alhambra, Calif.; Dunellen, Newark and Harrison, N. J.; Holyoke, Mass.; Wellsville, N. Y.; Oil City, Pa.; Minneapolis, Buffalo and Denver.

Highway Tank & Steel Corp.

Abram Pugash, Elaine Silverman and Milton H. Friedman incorporated Highway Tank & Steel Corp. in Buffalo.

United Lacquer Mfg. Expands

Increased demand for protective finishes and industrial coatings has resulted in a move by United Lacquer Mfg. Corp., Linden, N. J., to expand its production facilities. Finishes particularly in demand, S. L. Cantor, vice president, said, are rust inhibiting coatings and exposure resistant enamels. The company is building an explosion-proof factory building in that city and hopes to occupy it in about 30 days.

Foundrymen Plan New Project

A program to found a technical center for the producers of cast metals vital to the nation's rearmament program is announced by the American Foundrymen's Society, Chicago. Over $95,000 of a $100,000 goal has been raised by voluntary subscription from members of the society for this center to be established during the next two years in one of the principal midwestern foundry centers. Importance of cast metals to rearmament has been shown by the enormous requirements of the armed forces during two World Wars, says Walton L. Woody, president of the Society and vice president in charge of operations, National Malleable & Steel Castings Co., Cleveland.

Pennsalt Extends Services

A new sales department to serve industry and business in maintenance work, from heavy-duty cleaning of railroad equipment to the cleaning of walls and floors in office buildings and institutions, was organized by Pennsylvania Salt Mfg. Co., Philadelphia. The Maintenance Chemicals department is headed by Horace F. McIntyre.

Raytheon Builds Quincy Plant

Partial operations are expected by early next fall in Raytheon Mfg. Co.'s plant which is being erected at Quincy, Mass. The plant, estimated to cost about $1.2 million, will produce subminiature type electronic tubes used exclusively in military electronic equipment.

Plane Subcontractor Expands

Langley Corp., aircraft subcontractor, will build a factory costing more than $200,000 in southeastern San Diego, Calif. The company will retain its smaller plant in downtown San Diego where it produced aircraft parts during World War II and has since manufactured fishing equipment.

Taylor Forge To Build Plant

Taylor Forge & Pipe Works, Chicago, will build a plant at Gary, Ind. The firm recently ordered 1000 tons of structural steel from U. S. Steel Co. for construction.

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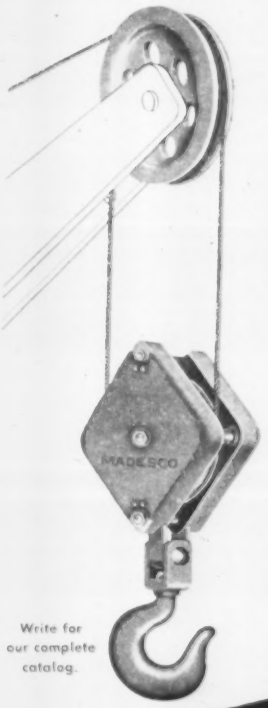

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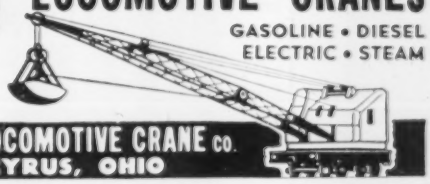
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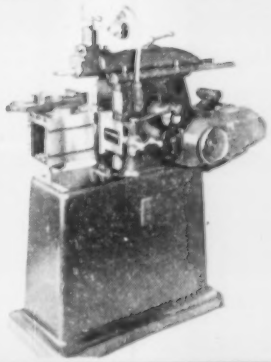
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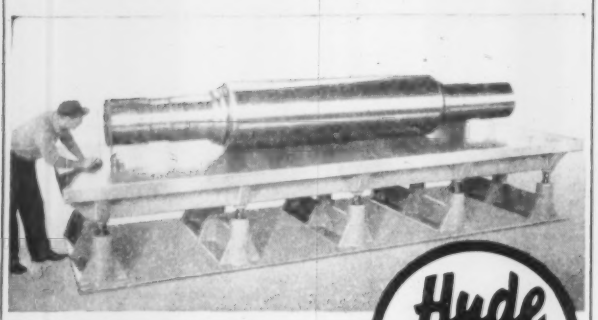

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